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PIPELINE SAFETY—THE RISE OF THE FEDERAL ROLE

A REPORT

PREPARED BY THE

CONGRESSIONAL RESEARCH SERVICE

FOR THE USE OF THE

SUBCOMMITTEE ON FOSSIL AND SYNTHETIC FUELS

OF THE

COMMITTEE ON ENERGY AND COMMERCE
U.S. HOUSE OF REPRESENTATIVES

MARCH 1986

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U.S. HOUSE OF REPRESENTATIVES
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COMMITTEE ON ENERGY AND COMMERCE
WASHINGTON, DC 20515

March 6, 1986

The Honorable John D. Dingell
Chairman
Committee on Energy and Commerce
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

The enclosed report entitled "Pipeline Safety -- The Rise of the Federal Role," was prepared by the Congressional Research Service for the Subcommittee on Fossil and Synthetic Fuels as a background document for use in connection with the Committee's continued review of the Federal pipeline safety program. The report covers a number of related topics concerning pipeline safety: a historical review of the involvement of the Federal government with pipeline safety, a legislative history of the current pipeline safety statutes, and a review and summary of current pipeline safety issues.

This report answers the basic background questions most frequently asked concerning the federal role in pipeline safety. It also includes a bibliography of relevant legislative history and regulatory changes to the program.

I believe that this report merits the attention of Members concerned with the safety of this nation's pipeline system. The report provides an easily accessible reference to an important program which has served as a model for Federal-State cooperation. I request that it be published as a committee print.

Sincerely,

Philip R. Sharp
Chairman

PRS:rs

Enclosure

III

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LETTER OF SUBMITTAL

January 31, 1986

Honorable Philip R. Sharp
Chairman, House Subcommittee on
Fossil and Synthetic Fuels
Committee on Energy and Commerce
House of Representatives
Washington, D. C. 20515

Dear Mr. Chairman:

In response to your request, we are submitting a report on the history of Federal Government involvement in the safety of interstate and intrastate pipelines. The report is entitled: "Pipeline Safety--The Rise of the Federal Role."

The report covers the general history of U. S. pipelines, the emergence of pipeline safety as a political issue for Federal Government attention, the history of pipeline safety legislation in Congress, and the development of regulatory practices under the Federal law. The focus is on the question: "how did the Federal program in pipeline safety become what it is today?"

The authors of the report are David Hack, Analyst in Social and Physical Science, and David Cheney, Analyst in Science and Technology, Science Policy Research Division; Robert Poling, Specialist in American Public Law, American Law Division; David Lindahl, Specialist in Energy Policy, Environment and Natural Resources Policy Division; and John J. Schanz, Jr., Senior Specialist in Energy and Mineral Resources Policy, Senior Specialists Division. David Hack was the project coordinator.

We hope that this report will serve the needs of the subcommittee as well as those of the Congress as a whole.

Sincerely,

Joseph E. Ross
Acting Director

IV

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CONTENTS

INTRODUCTION..... 1

EXECUTIVE SUMMARY..... 3
History and Industrial Organization of Oil and Gas Pipelines..... 3
The Rise of Pipeline Safety as a Federal Issue..... 5
Pipeline Safety Legislation and Regulation..... 6
Recurring Issues in Pipeline Safety..... 9

I. HISTORY AND INDUSTRIAL ORGANIZATION OF OIL AND GAS PIPELINES..... 11
Oil Pipelines..... 11
The Early History of Oil Transportation..... 11
Crude Oil Transportation Today..... 16
Refined Products Transportation Today..... 18
Regulation..... 22
Gas Pipelines..... 22
The Early History of Gas Transportation..... 22
The Gas Industry Structure Today..... 24
Where the Gas Goes..... 25
Gas Transmission Systems..... 27
Regulation..... 28
Photo Illustrations--Pipeline Construction Methods..... 29

II. THE RISE OF PIPELINE SAFETY AS A FEDERAL ISSUE (1950-1967)..... 51
Accidents and Advocacy..... 51
Industrial Code Development for Pipeline Safety..... 56
Activity by the Federal Power Commission and in Congress --1955-1958..... 58
The Federal Power Commission's Custodianship of the Heselton Initiatives--1959-1965..... 59
The Explosion at Natchitoches, Louisiana (March 4, 1965)..... 60
Pipeline Safety Policy in the States..... 67
A Summary of Pipeline Safety Policy--1951-1968..... 71
The Consumer Interests Issue in the Senate and Presidency..... 72
Pipeline Safety Becomes an Issue in Eminent Domain Proceedings.. 76
Automobile Safety and Pipeline Safety Cross Paths..... 78
The Federal Power Commission Report to the Senate Commerce Committee (1966)..... 80
The FPC'S Growing Role in Electric Power Reliability and Pipeline Safety..... 83
Transportation Policy in Ferment..... 84
The President's Timely Proposal..... 89

BEST COPY AVAILABLE

III. PIPELINE SAFETY LEGISLATION AND REGULATION (1967-1985)..... 103
Introduction..... 103
The Natural Gas Pipeline Safety Act..... 104
House Action on the Natural Gas Pipeline Safety Act..... 106
Conference Committee Action..... 107
Establishment of DOT's Natural Gas Pipeline Safety Program..... 109
Hazardous Liquid Pipeline Safety Regulations..... 110
Development of the Office of Pipeline Safety--1969-1971... 111
1971 Oversight Hearing and 1972 Legislation..... 115
The Office of Pipeline Safety Assumes Jurisdiction Over Hazardous Liquids and LNG--1972..... 118
The 1974 Admendments to the Natural Gas Pipeline Safety Act..... 119
The Pipeline Safety Program--1975-1976..... 121
The 1976 Amendment to the Natural Gas Pipeline Safety Act..... 125
DOT Pipeline Program and Legislation--1977-1979..... 128
The Pipeline Safety Act of 1979..... 129
Pipeline Safety Activities--1979-1983..... 134
Activities in the Congress..... 134
Activities of the Department of Transportation..... 135
Litigation in the Courts..... 137
1984 Reauthorizing Legislation Under the 1968 and 1979 Acts..... 139
The 1984 GAO Report on Pipeline Safety..... 141
1985 Reauthorizing Legislation Under the 1968 and 1979 Acts..... 143
Summary..... 148

IV. RECURRING ISSUES IN PIPELINE SAFETY..... 149
How Serious Are the Risks?..... 149
How Much Should Society Pay for Pipeline Safety?..... 150
What Are the Appropriate Roles of Federal and State Governments?..... 152
Who Should Pay?..... 153

APPENDIX A: "DRAFT REPORT ON NATURAL GAS PIPELINE SAFETY" (from the Administrative History Files of the Johnson Administration)..... 157
Resume of B31.8 Code Committee Activities..... 169

APPENDIX B: OUTLINE OF SELECTED PUBLIC LAWS AND COMMITTEE REPORTS RELATING TO PIPELINE SAFETY..... 173

APPENDIX C: CONGRESSIONAL HEARINGS RELATING TO PIPELINE SAFETY..... 177

APPENDIX D: CHRONOLOGY OF SELECTED PIPELINE SAFETY REGULATIONS..... 181

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PIPELINE SAFETY--THE RISE OF THE FEDERAL ROLE

INTRODUCTION*

In recent years there has been interest--by members of Congress, the Department of Transportation, State regulators and industry representatives--in reassessing the Federal pipeline safety programs to match Department of Transportation responsibilities with the resources provided by the Congress. The focus of this interest is to assure uniformity in regulation and enforcement, to prevent needless duplication of resources, and to allow States to choose and to pay for the amount of enforcement of the regulations that they want.

The suggestions of a 1984 GAO report, titled "Need to Assess Federal Role in Regulating and Enforcing Pipeline Safety," define several important details concerning the administration of the current program. However, there are larger, and perhaps more important, public policy issues that are presented by the current status of the Federal pipeline safety program. During the current period of budget austerity, one policy issue is the cost of the Federal program measured against its effectiveness. The requirement of Federal payment for State enforcement of Federal standards appears not to have achieved the goals of regular annual inspections of natural gas pipelines. In addition, only a few States have yet established significant programs for hazardous liquids pipelines.

Is the Federal-State relationship working? Is it worth the Federal expenditure compared to other regulatory programs or other regulatory options for pipelines? Should the Federal Government require a greater funding commitment by the States? Should the Federal Government vacate the field of pipeline safety enforcement in favor of full State enforcement of Federal regulations? The reluctance of Congress to fund fully all aspects of the natural gas and hazardous liquids programs, along with their full authorized grants-in-aid to the States, suggests a need to determine whether the present scheme of regulation truly can be successfully implemented in the near future.

There are important benefits for the pipeline industry in having uniform regulations throughout the Nation. The Federal interest in regulating the safety of interstate pipelines, and avoiding the burdensome effects of differing State regulations on a single pipeline company, is significant. But it appears to be extremely difficult to measure the current effectiveness of the pipeline safety program. The number of significant injuries, or the magnitude of property loss, may not be the best measure of the quality of the existing Federal program. Potential civil liability for property loss and personal injury provides a significant incentive for pipeline companies to conduct their current operations with great care. But if the objective of the Federal safety program is to anticipate

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circumstances that might cause significant injuries or significant property loss in the future, the current program has many weaknesses attributed to it that raise fundamental questions about its ability to achieve that objective.

Although many important issues about the current and future administration of the pipeline safety program have been addressed, by both the Congress and the Department of Transportation, the specific recommendations examined imply continuation of the program in its current form with changes limited to improved administration. Perhaps a full re-examination of the scheme of regulation is appropriate at this time.

How did the Federal Government get where it is in pipeline safety? That is the question which began this historical study of the Federal Government's role. One political science model describes federal regulation of technology as follows: (1) a new technology is applied, after which (2) unforseen misfortunes occur and the public and Congress become sensitized to new dangers, then (3) State control becomes seen as inadequate, and ultimately additional power is ceded to the Federal Government to regulate the new technology in its interstate aspects. Each chapter of this study is intended to cover one of the above three phases of pipeline and pipeline-safety history.

Chapter I, "History of Oil and Gas Pipelines," covers the early history and growth of the pipelines and pipeline companies themselves. Why were they constructed, where, when, by whom, and how? At the beginning of Chapter II (1950), the modest coverage given by the press to pipeline accidents, and perhaps constituent concern over the eminent domain powers of pipeline companies, prompt the first attention by Congress. This Chapter, titled "The Rise of Pipeline Safety as a Federal Issue," portrays the experiences of the public with pipeline accidents and pipeline companies, the motives of various contending people and groups, and the early responses of elected and appointed public officials to the accidents and rising issues. This chapter takes the narrative to the point at which Federal regulation of pipeline safety was made an explicit legislative goal of the Johnson Administration (1967).

In Chapter III, we follow the legislative course of the Natural Gas Pipeline Safety Act of 1968, and continue the legislative and regulatory history of pipeline safety through amendments and reauthorization debates up to 1985. This chapter is called "Pipeline Safety Legislation and Regulation." Thus we sketch the response of the Congress, from 1967 to 1985, to the accidents which occurred and the issues which were raised. Chapter IV is evaluative and conclusory, and so is titled "Recurring Issues in Pipeline Safety." This chapter draws from the history some perennial controversies: how serious are the risks posed by pipelines, what level of resources should be devoted to increasing pipeline safety, what are the appropriate roles of the Federal and State governments, and--not the least perennial--who should pay for ensuring or increasing the safety of pipelines?

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EXECUTIVE SUMMARY*

HISTORY AND INDUSTRIAL ORGANIZATION OF OIL AND GAS PIPELINES

Crude oil, from surface seeps, has been gathered and used for a variety of purposes from ancient and even prehistoric times, but its modern era began in 1855 with the discovery that it could be refined by distillation into its component lighter and heavier fractions. This started a series of events which created the U. S. oil industry. The commercial value of kerosene as a substitute for whale oil prompted the successful drilling of the first well specifically intended for oil production--in Pennsylvania, in 1859. For a few years, the oil was transported from the field in barrels loaded on horse-drawn wagons--which frequently bogged down in a mixture of mud and spilled oil. The first oil pipeline, a five-mile line built in 1865 to bring oil from the field, had to overcome difficulties raised by the wagon operators. By 1866, though, there were 58 refineries in Pittsburgh alone. The railroads resisted the competition of the pipelines to supply these refineries directly, but by 1874 there was a 60-mile trunk line to Pittsburgh, and in 1878 a line was begun to move oil across the Alleghenies to Atlantic ports. Thus, the technology of the long-distance oil pipeline was developed within twenty years of the first oil refining activity.

John D. Rockefeller was not interested in oil production or in retail marketing, but he regarded transportation as an extension of his refinery operations. His Standard Oil Trust became heavily involved in ownership and control of the transportation systems it relied upon. With control of approximately 90 percent of refining capacity, and much of the oil transportation network, the Trust had great leverage over the oil producers. After the Trust was dissolved in this century, the oil pipelines were classified and regulated as common carriers, obligated to accept all crude oil tendered for transport.

By World War II, the oceangoing tanker had become the most economical way to transport large volumes of crude oil for long distances, either transoceanic or coastal. But fear of German submarines prompted the U.S. Government to build transcontinental War Emergency oil pipelines, among which were those known as the Big Inch and the Little Inch. After the war, means of segregating different petroleum products into sequential batches were developed; so the gasoline pipelines became, or were joined by, multi-product pipelines carrying gasoline, kerosene, light heating oil, and jet fuel: everything but heavy fuel oils and lubricants, in sequence.

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The multi-product pipeline made the field refinery economic again, and also extended the reach of coastal refineries. As the Nation came to import more oil at its ports, the product lines expanded at the expense of those inland refineries situated near their markets. The railroads thus found themselves in a squeeze between bigger tank-trucks moving on improved highways and the large-volume, longer-distance petroleum products pipelines.

Oil pipelines were typically owned by combines of major oil companies, but commercially regulated as common carriers--since 1906 by the Interstate Commerce Commission, and more recently by the Federal Energy Regulatory Commission. The ICC's authority to regulate oil pipeline safety was little used, and was abolished by legislative inadvertance in 1960, but was restored in 1965 and transferred to the Department of Transportation at its creation in 1967.

The use of natural gas in modern commerce began earlier than use of oil, but developed more slowly than that of oil. One of the earliest uses of natural gas came about when accidental gas wells resulted from drilling for deposits of salt in underground salt beds. The gas from an accidental gas well could be used to recover the salt from brines, after the brines were brought to the surface from salt wells. In 1825, the streets of Fredonia, New York, were illuminated by natural gas distributed through wooden pipes--but the hazards of gas transportation and use, and the attendant costs of attempting transportation over any but short distances, slowed the growth of the gas industry for a century.

After World War II, the lower-cost transport of tanker ships displaced the shipment of oil through the War Emergency pipelines, and these were sold to private companies to be converted to interstate natural gas lines. Natural gas could not then be transported by ship, and the sunk cost of the oil pipelines built during the war was a considerable spur toward expanding nationally the use of natural gas in markets distant from the oil and gas fields. So the post-War era was a time of rapidly expanding transport of natural gas by pipeline. The common use of manufactured gas for municipal gas distribution came to an end, and by 1966 all of the contiguous 48 States had natural gas service. The interstate gas pipelines were built by gas transportation companies which were typically separate from the companies who produced the gas, or who distributed it at the consumption end. The petroleum producers were principally interested in oil, but they gladly sold their surplus gas into the new market created by interstate gas transmission.

By the mid-Twentieth Century, the gas industry had evolved in a fashion quite unlike the oil industry, and the government structures which regulated the gas industry reflected the same history as the gas industry itself. Because the gas pipeline industry began its growth near the cities, in the era of manufactured gas, the gas distribution companies with which this industry began were regulated by State commissions. When the interstate gas transmission system appeared, since it was an interstate utility, it was placed under regulation of the

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Federal Power Commission. But the Federal Power Commission interpreted its regulatory authority as economic only, not to include safety regulation, so safety regulation of natural gas pipelines, including those engaged in interstate commerce, was left to the States. The production of both crude oil and natural gas remained unregulated until 1954. At that time the Supreme Court brought gas production for interstate use under the control of the Federal Power Commission also.

THE RISE OF PIPELINE SAFETY AS A FEDERAL ISSUE

There was sporadic but increasing Federal attention paid to pipeline safety from 1950 to 1967. In 1950, Rep. John Heselton of Massachusetts implied that his attention was first drawn to the subject of pipeline safety by a pair of pipeline explosions in states not represented by him (Virginia and Pennsylvania). This may have been, or possibly Heselton's attention was first drawn to pipeline safety as an extension of constituent interest in the issue of eminent domain, affecting landowner's rights in his own Massachusetts district, where constituent property was being crossed by a pipeline under construction.

Whichever way it was, Heselton undertook to raise the visibility of several relatively obscure pipeline accidents of 1950. He compiled information on such accidents for insertion in the Congressional Record and he introduced pipeline safety bills in the 81st through 85th Congresses. Thus he brought the issue to the attention of the Federal Power Commission in a way that lingered in the FPC's nominal legislative program long after Heselton's interest in the matter changed form--and even after Heselton retired from Congress. Perhaps some constituent interest in Massachusetts was advanced by the legislative activity (and negotiations with the pipeline industry) without a law or a bill being passed. Perhaps Heselton just saw a need and addressed it legislatively out of a sense of statesmanship. From the information available, Heselton's precise agenda and motive remain obscure. Nevertheless, the Heselton actions laid some groundwork for Federal involvement. They appear to have been the first legislative initiatives at the Federal level dealing with pipeline safety as a subject separate from either pipeline economic regulation or the general area of transportation of explosives.

Rep. Heselton's interest in safety--beginning in 1950, so soon after the 1947 eminent domain legislation--suggests that, once the gas pipeline companies were granted the power of eminent domain under Federal law, the issue of interstate gas pipeline safety could not fail forever to be joined at the Federal level.

In 1963-1967, there is clear evidence that the issue of pipeline safety was raised in an eminent-domain context, this time in connection with a petroleum products pipeline. The march of more pipeline construction through Pennsylvania siezed the attention of landowners, who organized to influence events, and fought the constructing pipeline company in court, specifically on the safety

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issue. This interest became merged, politically, with the Federal reaction to a fatal gas pipeline explosion in Louisiana. The political controversy over safety arising from these merged interests was amplified by a particularly dramatic explosion and fire on a gas distribution pipeline in the news media center of New York City.

These events occurred in a time of Federal regulatory and legislative activism. A national agenda of consumer interest legislation had grown to include consumer safety issues--and the consumer safety issue was extended from specific consumer products (such as automobiles) to the safety of such industrial operations as might endanger citizens, beyond the danger from the citizens' own immediate and voluntary product choices.

In both the 1950s and the 1960s, the spectre of human danger from pipeline explosions was often superseded by the reality of lives lost in foreign wars and in accidents involving the daily transportation of citizens themselves. But, after the explosions and fires in Louisiana in 1965 and New York in 1967, a political momentum was generated. The issue became embedded in an activist President's specific legislative agenda and was sustained by the political culture and media infrastructure of the time.

PIPELINE SAFETY LEGISLATION AND REGULATION

The Senate Commerce Committee, after 5 days of hearings in 1967, reported a bill which gave power of safety regulation to the Secretary of Transportation, for natural gas transmission and distribution lines affecting interstate commerce, but excluded other flammable gas and nonflammable hazardous gas from such regulation. The bill directed the Secretary of Transportation to issue minimum Federal safety standards within 24 months, and to issue interim standards within 3 months.

In May 1968, the House Committee on Interstate and Foreign Commerce reported S. 1166 in amended form. A conference committee was convened to resolve the differences between the House and the Senate, and this committee reported in July 1968. While the Senate bill authorized from $10 million to $15 million annually, the House bill authorized only $0.5 million to $3 million annually, never more than 1/5 as much. The conference agreement was very close to the lower, House, levels. Thus was the stage set for a level of funding incommensurate with the responsibilities assigned. Also excluded from the conference bill was a Senate provision specifically authorizing the Secretary to require fees of the pipeline companies to defray expenses of Federal inspection and enforcement. The bill was signed into law by President Johnson, August 12, 1968.

The amount actually appropriated for the fledgling Office of Pipeline Safety (OPS) for the ten months remaining in the fiscal year was $250,000--half of the amount authorized and only one-fortieth the amount proposed by the Senate authorization bill.

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The Office published its first (interim) regulations on November 13, 1968. For the States having no existing standard to be adopted, the standard adopted was the B31.8 code that formed the basis of standards in most of the other States. DOT published new, permanent, Federal safety standards for gas pipelines on August 19, 1970. The standards for operation, maintenance and inspection became effective November 12, 1970, and those for design, installation and testing became effective March 12, 1971. However, by the end of 1970, the OPS still had only a very limited field surveillance force, and had taken no enforcement actions. However, several States had taken actions to enforce compliance with the Federal Standards.

In 1971 the OPS published regulations for controlling corrosion, which some studies blamed for 50 percent of all pipeline leaks.

At oversight hearings of the House Committee on Interstate and Foreign Commerce in 1971, the States complained that they, as agents of the Federal Government, had not been allowed to assess fees for their costs, and that the Office of Management and Budget had held up payment to them of funds appropriated by Congress for their reimbursement.

In late 1971, following DOT testimony, the Senate Commerce Committee reported a bill extending for three years (to 1973) the "State sanction" deadline (the deadline for States to comply with the requirement of the Federal law that States electing to assume enforcement of the Federal regulations actually have certain enforcement powers in their State laws). This bill also expanded the grants-in-aid provision to assist states in the cost of administering the Act, and authorized appropriations therefor. In June, 1972, the House Committee on Interstate and Foreign Commerce reported a bill which provided for a two-year extension (to 1972) of the State sanction requirement under the act, and authorized grants-in-aid up to 50 percent to reimburse States for the costs associated with Federal enforcement. The Senate bill, with some minor modifications, was adopted in conference, and these 1972 amendments were signed into law.

Following the 1972 amendments, a U.S. District court decision upheld a West Virginia statute authorizing State assessment of fees against interstate pipelines. The key feature of this law was that it limited the reach of State regulation "to the extent permitted by the Act of 1968 and any amendments thereto," and thus avoided conflict with Federal pre-emption. The decision was affirmed on appeal, and thus the concerns over inability of the States to charge inspection fees were resolved.

In 1972, the OPS also expanded its jurisdiction by issuing standards covering handling of liquefied natural gas (LNG). Soon, a dramatic accident illustrated the need for these standards. On February 10, 1973, forty workers repairing an out-of-service LNG storage tank were killed by an explosion. In response, the House Committee on Interstate and Foreign Commerce held extensive hearings on LNG safety issues in 1973.

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In 1974, the House Committee on Interstate and Foreign Commerce held hearings on the adequacy of the funding and staffing levels. In 1974, the OPS employed 25 people. Both the DOT and legislators agreed that the funding and staffing levels were inadequate to meet the assigned responsibilities.

In 1975, the DOT established the materials transportation Bureau and re-named the OPS as the Office of Pipeline Safety Operations (OPSO). A House-Senate Conference report in 1976 expressed dissatisfaction with the way the Technical Pipeline Safety Standards Committee had worked out.

In 1978, the DOT reorganized again. The functions of the old Office of Hazardous Materials Operations were re-distributed, within the Materials Transportation Bureau, into an Office of Pipeline Safety Regulation, an Office of Hazardous Materials Regulation, an Office of Operation and Enforcement, and an Office of Program Support. The effect was to separate the regulatory responsibility from the compliance operations and to consolidate operations for pipeline safety and hazardous materials programs into one office. The DOT also added two staff attorneys to evaluate and prosecute enforcement cases.

In 1979, both House and Senate held oversight hearings and reported new legislation. The Senate Commerce Committee reported S. 411, a companion bill to the Administration's bill in the House--H.R. 2207. The bill contained two titles: one to amend the Natural Gas Pipeline Safety Act and another to newly regulate the safety of hazardous liquid pipeline transportation. Although two House Committees reported versions of a House bill (H.R. 51), the House eventually, near the end of the 96th Congress' 1st session, passed the Senate bill without amendment. This bill became the Pipeline Safety Act of 1979. In 1981, in Senate Commerce Committee oversight hearings on the 1979 act, the issue of maintaining adequate funding was again raised. Austerity measures begun by the Reagan Administration were already beginning to be felt. The grants to the States for the first time fell below the 50 percent of total State expenditures allowed, falling to 42 percent.

In 1981, 1982, and 1983, the DOT reviewed and revised regulations that were then thought not to be cost-effective, and published regulations designed to prevent damage to pipelines from outside forces, such as construction or farming operations. Studies of LNG siting regulations were initiated. The DOT also began to consider writing regulations in terms of performance standards instead of specific engineering detail. The DOT still had not published regulations for intrastate liquid pipelines, and budget cuts limiting State grants reduced State enthusiasm for a hazardous liquid program.

In 1983, DOT made it easier for the industry to use the latest types of steel pipe, allowed repair (rather than replacement) of girth weld defects, and revoked the requirement that pipeline crossings of navigable waters be marked.

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In 1984, hearings on authorizations, the General Accounting Office testified that fifteen States had recently had staffing or funding cutbacks, and that four States were considering leaving the program. The House Subcommittee on Fossil and Synthetic fuels questioned the adequacy of DOT staffing and funding, its research and development, and the status of the long-delayed regulations on intrastate hazardous liquid pipelines. Other questions raised included concerns over inspection priorities and master meter systems inspections.

The final authorization granted for FY 1985 was $2.472 million for Natural Gas Pipeline Safety, $3.728 million for State grants-in-aid, and $0.5 million for hazardous liquid pipeline safety. The Act also required a study of methods of inspecting and testing liquid pipeline facilities and a feasibility study for pipeline transportation of methanol. The Act further required a report on all pipelines constructed before 1940 and leak-survey information for those pipelines.

In July 1984, some of the same questions raised in hearings were presented more fully in a report of the General Accounting Office on the "Need to Assess the Federal Role In Regulating And Enforcing Pipeline Safety." In April 1985, the DOT issued final rules for intrastate transportation of hazardous liquids. These rules became effective in October 1985, so that the DOT could begin the State grant program in 1986. In 1985, many of the policy issues considered by the Congress were those raised in the 1984 GAO report.

RECURRING ISSUES IN PIPELINE SAFETY

How serious are the risks imposed by pipelines? It is rare that more than 30 people die in pipeline accidents in a given year--while as many as 50,000 have died in automobile accidents in a single year. However, in part because pipeline accidents are rare, but sometimes dramatic, and have the potential to kill tens or hundreds, they occasionally attract wide attention by the news media. Pipeline companies and their operations seem remote and anonymous to the public at large when the public thinks about them at all. Society generally regulates more closely those activities which put at risk persons other than those who engage in the activity. Risks voluntarily assumed are less rigorously regulated.

How much money should be devoted to increasing pipeline safety? Throughout the history of pipeline safety there has been controversy over how to measure the risk of pipeline operations and what other risks to compare it with. Concurrently at issue has been the quantity of government effort and public money to spend alleviating such an ambiguous risk. It is harder to measure the costs that safety regulation imposes on the pipeline industry, but ideally one would wish to compare the incremental benefit of government regulation with the incremental cost (both public and private) of government regulation.

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What are the appropriate roles of the Federal and the State governments? The Department of Transportation (1) sets uniform national standards for safety of both inter- and intrastate pipelines. (2) It performs research essential to effective regulation. (3) It develops training programs and manuals to promote consistent interpretation of the regulations and (4) enforces the regulations on both some interstate and some intrastate lines. Under the law developed since the mid-1960s, the DOT has acquired the responsibility to regulate the pipelines, both interstate and intrastate, that the States choose not to regulate, plus some distribution systems and 29,000 "master meter" systems installed in apartment complexes and mobile home parks. The DOT does not seem to have the resources to inspect all of these systems.

Who should pay for the safety of pipelines? Since passage in 1968 of the Natural Gas Pipeline Safety Act, there has been discussion of, or controversy over, imposition of user fees to defray the cost of inspection and enforcement. Although courts have held that States may assess fees under their own State laws, if the laws are written not to conflict with Federal law, the DOT believes that it does not have the authority itself to assess user fees for its own inspection and enforcement activities. The Federal grants-in-aid to States for their enforcement activities are popular with the States, and have helped to enlist some States in the program, but the States, the pipeline companies and the Congress seem to want one or more of the other groups to take on a greater share of the enforcement cost.

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I. HISTORY AND INDUSTRIAL ORGANIZATION OF OIL AND GAS PIPELINES*

Before examining the history of pipeline safety it is useful to consider the history, structure, operations, and regulatory regimes of both oil and gas pipelines. As physically comparable means of moving energy, they share many similarities, yet there are substantial differences between the two types of systems because of the nature of the commodities that they carry and their vastly different histories. They are similar in that they (1) enjoy economies of scale on overland routes, (2) are more efficient under appropriate operating conditions than competing overland modes, (3) have been in continuous and reliable operation for decades, (4) can operate in remote and hostile environments for long periods of time without incident, (5) offer shippers a variety of routes from which to choose, and (6) do not normally interfere with other surface activities.

The differences include (1) carriage of commodities that have very different characteristics (a liquid versus a gas); (2) not-always-identical sources and markets; (3) different kinds of safety risks for gas than for oil; (4) two kinds of regulatory regimes--utility status for gas, common carrier for oil; (5) ownership of oil lines primarily by producing companies, but gas pipeline companies more often not producing the commodities that they carry; (6) initial evolution of oil lines around sources, but gas lines around markets; and (7) historically, a greater concern among oil and gas producers about access to oil lines than to gas lines.

OIL PIPELINES

The Early History of Oil Transportation

While the gathering and use of crude oil for a variety of purposes extends back into ancient and even prehistoric times, its modern era began with the discovery in 1855 by Professor Silliman of Yale that it could be distilled into fractions, one of which (kerosene) was a suitable replacement for whale oil in the lamps of that era. 1/ This triggered a chain of events that was to create the

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*Prepared by David Lindahl, Specialist in Energy Policy, Environment and Natural Resources Policy Division, and John J. Schanz, Senior Specialist in Energy and Mineral Resources Policy, Senior Specialists Division.

1/ References dealing with the history of the petroleum industry are numerous. The most recent is Anderson, R. O. Fundamentals of the Petroleum Industry, University of Oklahoma Press, Norman, Okla., 1984. 390 p.

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U.S. oil industry. Initially the only supply of crude oil to feed simple distillation operations was natural seeps or salt wells that had accidentally penetrated petroleum reservoirs--causing crude oil, natural gas, or both, to flow to the surface propelled by natural reservoir pressures.

It was decided by a group of entrepreneurs to attempt to produce oil intentionally by drilling a well in the vicinity of oil seeps in northwest Pennsylvania. (The site had been used as a source of oil by the Indians even before white settlers arrived.) This led to the successful drilling of the first oil well in 1859. The operation was managed by Edwin Drake, a retired railroad conductor, who was a self-designated Colonel. (His commission was subsequently legitimized a hundred years later by the Pennsylvania State legislature.)

Within a few years Pennsylvania became the Nation's first center of oil production and created a need to move the crude oil first to small refineries (many of which were converted from producing oil from local bituminous coal) and then to market. Older residents of the eastern United States still refer to kerosene stoves as "coal oil stoves." From the widely-scattered small oil wells, the first stage of the journey was by the barrel, in horse-drawn wagons. The next step- involving larger quantities that had been gathered--offered a choice: small barges down the local creeks and rivers or railroad cars using local spurs.

After refining in the vicinity of Pittsburgh, the kerosene was distributed to local markets in western Pennsylvania. Gradually distribution was extended to more distant markets, as they were increasingly attracted to this whale-oil substitute which was becoming progressively more abundant and cheaper. Quite naturally there was a considerable interest in improving the original disjointed, unreliable, and inefficient transportation system. The pipeline first appeared in the system as a suitable means of replacing the horse and wagon operations, that frequently got bogged down on the dirt roads of the time. The first attempt to pipeline crude oil from the field was a five-mile line in 1865. Not surprisingly, the wagon operators objected to the appearance of a competing gathering system. Similarly, the railroads--which had developed railroad cars with permanent tanks for crude oil--also contested the attempts of the pipeliners to move crude oil across country rather than just to the nearest railhead.

By 1866, there were 58 refineries in Pittsburgh, 30 in Cleveland, and more along the East Coast. Pipelines could no longer be restricted to being mere field gathering systems in oil transport. By 1874, there was a 60-mile trunk line to Pittsburgh. In 1878, pipeline construction began on a line to move crude across the Alleghenies to the Seaboard. Crude oil movement did not end at the coastline. The first small shipment of crude from Philadelphia to London was in 1861, and an ocean-going vessel with tanks installed in its hold was operating

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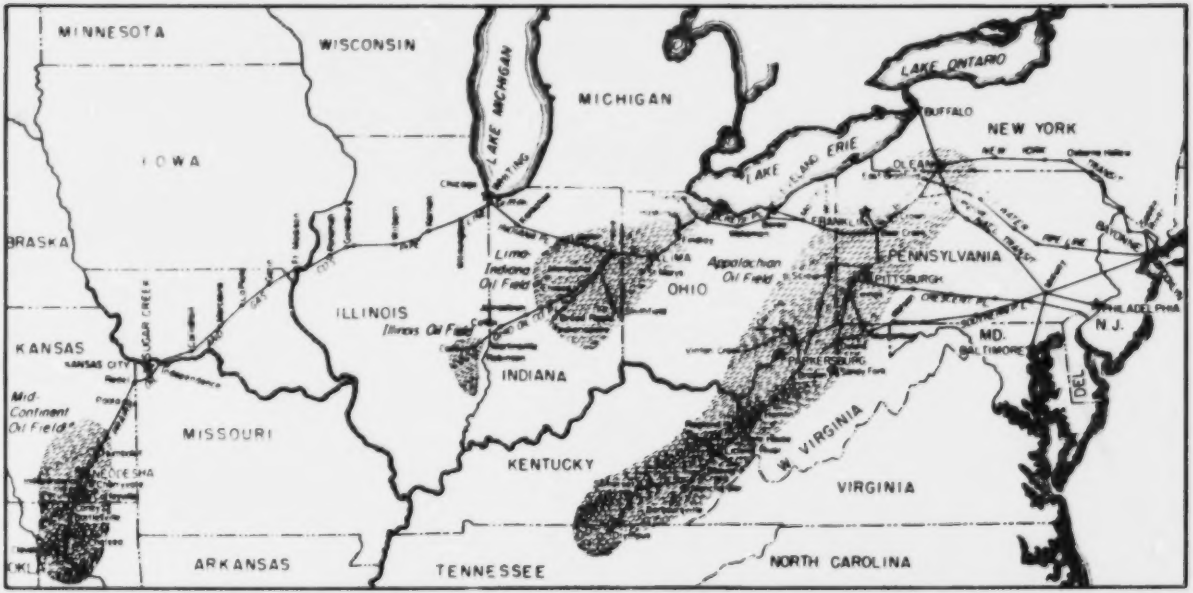
FIGURE I-1. Major Oil Fields and their Pipeline Connections, 1906



SOURCE: United States of America, Petitioner, v. Standard Oil Company of New Jersey et al., Defendants, Petitioner's Exhibits, VII, as found in Johnson, Arthur M., Petroleum Pipelines and Public Policy 1906-1959, Cambridge, Harvard Univ. Press, 1967. p. 6.

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by 1869. Thus, between 1859 and 1879, the basic pattern appeared: barges, tankers, road vehicles, pipelines, and railroad tank cars to move crude and products from field to final consumer. The production of crude had also spread from Pennsylvania to Ohio, to the Midwest, to California, and eventually to the Gulf States.

While the technology, including the pipeline, had appeared in only two decades, it was to take much longer for the institutional and regulatory framework to take shape. One key event was the creation of the Standard Oil Trust under the direction of John D. Rockefeller. Rockefeller, as a refinery executive, was not interested in either oil production or retail marketing, but primarily in supplying his refineries with crude and distributing the products to the widespread markets. In his organizational concept, transportation was an extension of the refinery facilities. As a consequence, the Standard Oil Trust became heavily involved in various forms of ownership or control of the transportation systems it relied upon. With control of approximately 90 percent of refining capacity, its leverage was tremendous. The crude-oil producers felt they were at the mercy of the Trust in their selling and transport of crude oil to the refineries. After the dissolution of the Trust, in the early part of this century, it is not surprising that oil pipelines, which remained under the ownership and operation of the major integrated oil companies, were classified as common carriers and obligated to accept all crude oil tendered to them for transport. The lack of independent ownership of oil pipelines was a reflection of the large investment and risks involved in pipelining, which were unavoidable and accepted by the refinery operator but unattractive to non-petroleum investors.

By World War II, the petroleum industry's transportation system had evolved into a reflection of both economic and physical circumstances. The tanker became the most economical manner in which to transport large volumes of crude or products on transoceanic routes, even though the routes might appear rather circuitous. Onshore, crude oil moved predominantly through small-diameter gathering lines, then through larger trunk lines to inland refineries located in the center of major marketing areas. Coastal refineries, however, received their deliveries by tanker. Despite some refining in the field in the early days, there was a disadvantage in locating the refineries in the field because the initial products, kerosene and lubricants, could not be moved by pipeline.

Once the crude oil had been distilled into products, these would move to the (business or private) consumer in a variety of ways, reflecting both physical circumstances and economic efficiency. Longer distances were served by the railroads, and occasionally by barges when inland waterways were available. The shorter distances and final delivery to the actual point of consumption were covered by the more mobile and flexible tank truck. Gradually, however, gasoline became the dominant product, which eventually led to pipelines being used for long-distance transport of gasoline.

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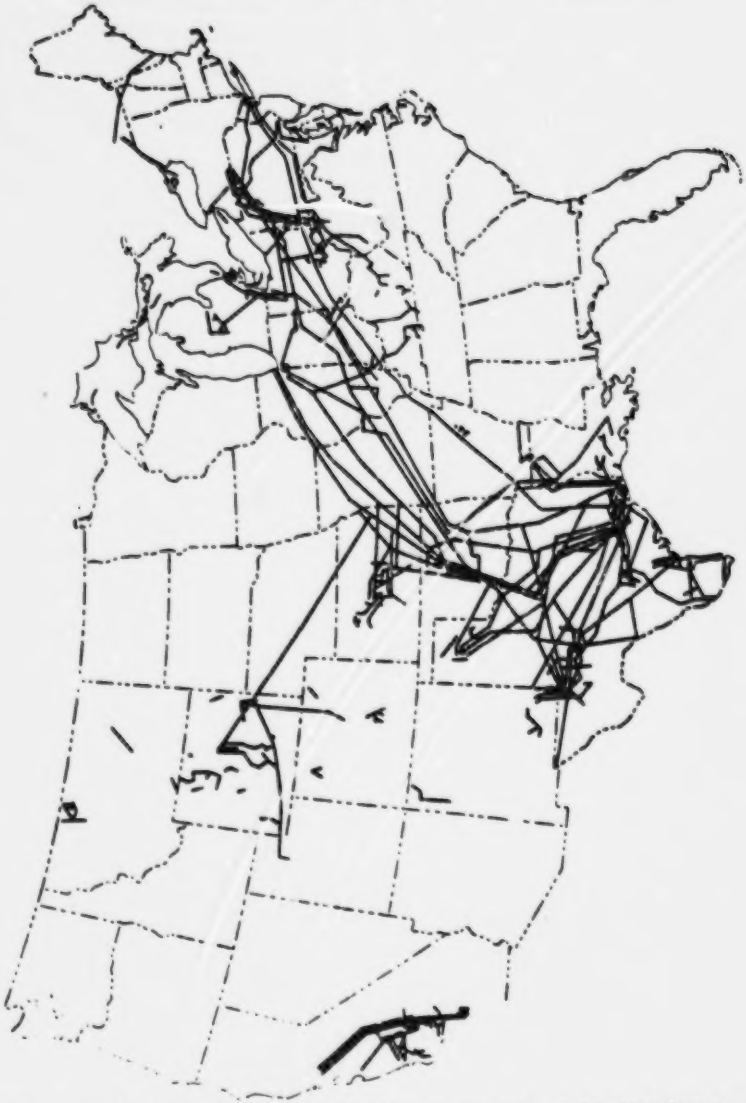
FIGURE I-3. Crude Oil Trunk Pipelines in the United States, 1944



SOURCE: Association of American Railroads, Subcommittee on Pipeline Transportation, Report. p. 159.

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Temporarily, during World War II, pipelines were substituted for tankers to avoid the German submarines--but this was a temporary measure. The one major change that occurred in transport technology after 1950 was the expansion in the use of the products pipeline. Initially, products pipelines were only used to move gasoline in large quantities to large inland markets, e.g., from a Philadelphia refinery receiving tanker shipments of crude, to western Pennsylvania or Ohio. However, it became possible to segregate products in the pipelines and the multiple-product pipeline appeared--moving gasoline, kerosene, jet fuels, light heating oil and so forth in sequence. Only the very heavy fuel oils and lubricants could not be moved in this fashion.

The multi-product pipeline made the field refinery economic once again. It also extended the reach of the coastal refinery, which enjoyed the twin advantages of inexpensive tanker movement and access to crude from anywhere in the world. As the United States shifted toward using more foreign oil, the product lines expanded rapidly and the inland market-oriented refineries diminished in relative importance. Concurrently, the highway network and larger trucks expanded the domain of the tank truck. This placed the railroads in a squeeze between trucks moving 100 or 200 miles and the large-volume, longer distance products piplines.

Crude Oil Transportation Today

Oil pipelines are now the principal means of moving crude oil overland, from the producing fields and port terminals to the refineries in the United States. The strong preference by oil shippers for pipelines over other modes (barge, rail, truck, tanker) is shown by the fact that, in 1980, pipelines carried almost 60 percent of the ton-miles of traffic. 2/ Pipelines, because of their enormous economies of scale, allow crude oil to be transported overland more cheaply than by any other mode. About 90 percent of the crude oil pipeline capacity in the United States is owned by major oil companies, either singly or as joint ventures, because of their ability to finance such projects.

Crude oil pipeline flows converge at two major refining areas (Houston and Chicago) and to a lesser degree at Baton Rouge/New Orleans, Toledo, Patoka (Illinois), Ponca City (Oklahoma), Corpus Christi, Port Arthur, Los Angeles, San Francisco, and Puget Sound. The major movements of crude oil by pipeline are from both the North (including Canada) and the South and Southwest, and they converge on the Chicago area through a complex network known as the Mid-Continent System. Oil from Alaska and foreign sources flows through the Gulf

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2/ Association of Oil Pipelines. Shifts in Petroleum Transportation. Washington, 1984. p. 2.

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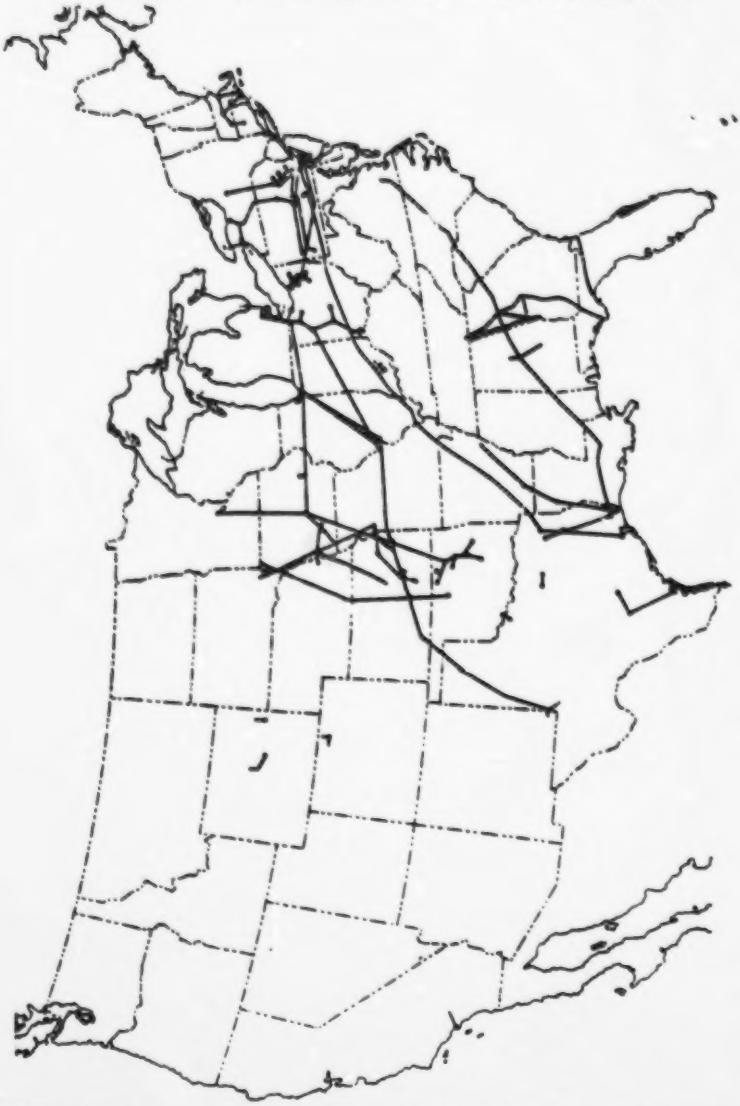
FIGURE I-3. Gasoline Pipelines of the United States, 1944



SOURCE: Association of American Railroads, Subcommittee on Pipeline Transportation, Report. p. 160.

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refining centers along with crude produced in West Texas and the Gulf. The largest pipeline in the United States, the 48-inch Trans-Alaska Pipeline System, extends 803 miles from the Alaskan North Slope to the Port of Valdez on the South Coast of Alaska and has a throughput of over 1.6 million barrels per day.

In substantially smaller volumes, crude oil moves southeast from Wyoming to refineries in Kansas and Missouri, and some oil for eventual refining in Canada moves through lines in Maine and in the Great Lakes Area. A pipeline from Southern California flows eastward through the Four Corners region to refining centers in Texas. With that lone exception, there are no West-to-East pipelines in the United States, although one is currently planned. No crude oil reaches the East Coast by pipeline; the major refining centers near Philadelphia and New York City are served entirely by tankers.

Refined Products Transportation Today

Pipelines also dominate the delivery of refined products. Because of their low unit costs and high efficiencies, product pipelines carry about 40 percent of the traffic. 3/ Because this type of line has a distribution function, rather than a gathering function, there is more competition with other modes than is the case with crude lines. They are similar to crude lines in that they are costly to build; consequently most are owned by the major oil companies, who build them to move their own products to market. As common carriers, however, they also accept shipments from non-owners. Most product pipelines are smaller than the crude lines and generally have smaller economies of scale, although some (like the Colonial Pipeline from the gulf coast to the Northeast) are as large as the largest crude lines. Some pipelines will carry both crude and product.

The flows of petroleum products by pipeline follow two distinct routes. The flow from the Gulf Region to the Southeast, Middle Atlantic, and Northeast is the largest product movement of all. It diminishes with deliveries through the Southeast, picks up some imported products in the Delaware Region, and finally delivers about one million barrels of product per day to the New York metropolitan region.

The second major flow is through a broad network of pipelines that extends through the Midwest and Central Plains Area, trending north and east, including direct connections to almost every major population center in those areas. These flows converge somewhat in

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3/ Association of Oil Pipelines, p. 2.

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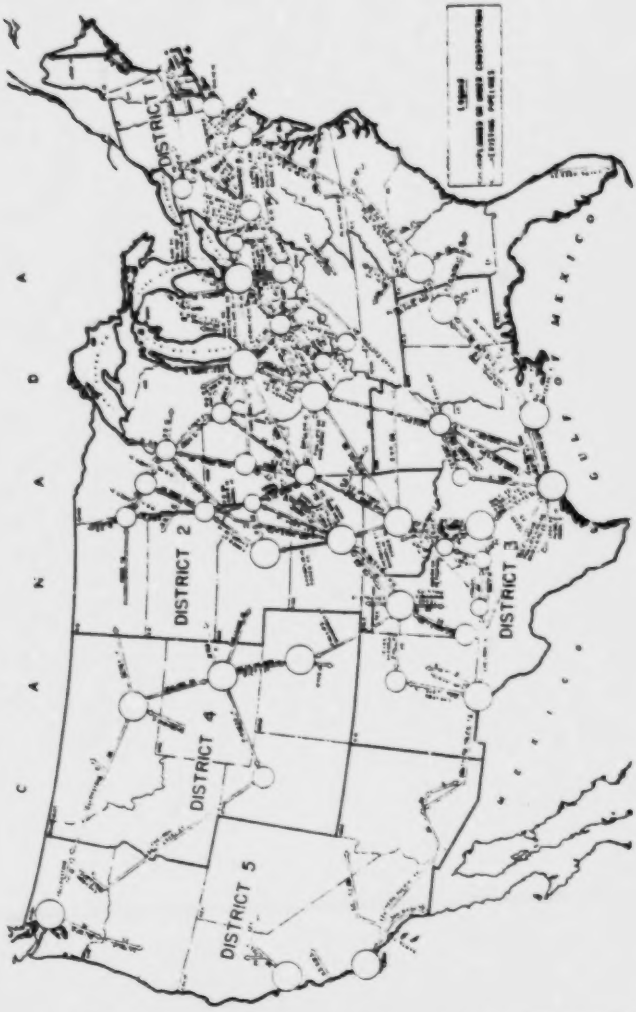
FIGURE I-4. Petroleum Product Pipelines in the United States, 1967 (existing, under construction, or planned as of Dec. 31, 1966)



SOURCE: National Petroleum Council, Pipeline Transportation Subcommittee, 1967.

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TABLE I-1. TOTAL CRUDE PETROLEUM CARRIED IN DOMESTIC TRANSPORTATION AND PERCENT OF TOTAL CARRIED BY EACH MODE OF TRANSPORTATION
In Tons of 2,000 Pounds

Year	Total Crude Petroleum Carried	PIPELINES		WATER CARRIERS		MOTOR CARRIERS[1]		RAILROADS	
		Tons Carried	Percent Of Total	Tons Carried	Percent Of Total	Tons Carried	Percent Of Total	Tons Carried	Percent Of Total
1939	180,508,947	128,175,000	71.01	46,173,283	25.58	2,115,000	1.17	4,045,664	2.24
1943	240,730,423	176,835,000	73.46	31,129,833	12.93	7,875,000	3.27	24,890,590	10.34
1948	322,991,312	221,198,250	68.48	75,126,140	23.26	12,450,000	3.86	14,216,922	4.40
1953	376,860,595	283,379,400	75.19	70,585,701	18.73	19,012,642	5.05	3,882,852	1.03
1958	402,173,215	307,059,000	76.35	67,965,254	16.90	25,953,401	6.45	1,195,560	0.30
1963	468,083,466	351,876,969	75.17	83,235,525	17.78	32,189,676	6.88	781,296	0.17
1968	574,814,400	425,837,300	74.08	107,010,300	18.62	40,900,000	7.11	1,066,800	0.19
1970	615,273,800	457,156,700	74.30	116,300,900	18.90	40,900,000	6.65	916,000	0.15
1971	616,257,000	459,860,200	74.62	114,720,700	18.62	40,800,000	6.62	876,100	0.14
1972	643,739,000	487,606,700	75.75	103,672,800	16.10	51,000,000	7.92	1,459,500	0.23
1973	640,391,700	492,382,300	76.89	90,518,500	14.13	55,590,000	8.68	1,900,900	0.30
1974	620,599,600	464,272,400	74.81	83,580,000	13.47	70,043,000	11.29	2,704,200	0.43
1975	611,616,700	454,690,000	74.34	77,887,000	12.74	76,207,000	12.46	2,832,700	0.46
1976	608,630,800	458,508,800	75.33	75,210,000	12.36	72,625,500	11.93	2,286,500	0.38
1977	636,774,800	460,132,800	72.26	84,816,600	13.32	89,692,500	14.09	2,132,900	0.33
1978	685,081,200	447,552,900	65.33	145,987,400	21.31	89,558,000	13.07	1,982,900	0.29
1979	690,398,700	437,135,400	63.32	148,853,300	21.56	102,973,800[P/]	14.91	1,436,200	0.21
1980	702,567,300	412,764,500	58.75	174,190,700	24.79	114,197,900[P/]	16.26	1,414,200	0.20

1 The amounts carried by motor carriers are estimates.

P/Preliminary

Source: Association of Oil Pipelines

TABLE 1-2. TOTAL PETROLEUM PRODUCTS CARRIED IN DOMESTIC TRANSPORTATION AND PERCENT OF TOTAL CARRIED BY EACH MODE OF TRANSPORTATION
In Tons of 2,000 Pounds

Year	Total Petroleum Products Carried	PIPELINES[2] Tons Carried	PIPELINES[2] Percent Of Total	WATER CARRIERS Tons Carried	WATER CARRIERS Percent Of Total	MOTOR CARRIERS[1] Tons Carried	MOTOR CARRIERS[1] Percent Of Total	RAILROADS Tons Carried	RAILROADS Percent Of Total
1938	173,911,713	11,045,962	6.35	91,555,208	52.65	18,423,060	10.59	52,887,483	30.41
1943	233,003,200	19,556,443	8.39	84,865,592	36.42	68,596,500	29.44	59,984,665	25.75
1948	363,282,518	41,254,281	11.36	162,390,189	44.70	108,447,800	29.85	51,190,248	14.09
1953	485,834,799	75,762,935	15.59	202,890,739	41.76	165,612,789	34.09	41,568,336	8.56
1958	615,006,000	125,968,566	20.48	230,690,771	37.51	226,071,342	36.76	32,275,321	5.25
1963	727,919,323	169,272,168	23.25	252,376,335	34.67	280,393,430	38.52	25,877,390	3.56
1968	988,583,300	300,606,000	30.41	253,992,300	25.69	408,800,000	41.35	25,184,400	2.55
1970	1,070,468,000	333,085,000	31.12	286,367,000	26.75	425,200,000	39.72	25,816,000	2.41
1971	1,103,555,900	346,810,800	31.13	302,071,300	27.37	429,900,000	38.96	24,773,800	2.24
1972	1,199,710,500	388,641,400	32.39	322,930,400	26.92	462,500,000	38.55	25,638,700	2.14
1973	1,282,527,200	419,827,600	32.74	330,687,300	25.78	504,177,000	39.31	27,835,300	2.17
1974	1,253,462,500	420,375,600	33.54	323,868,200	25.84	481,993,000	38.45	27,225,700	2.17
1975	1,219,899,100	424,759,300	34.82	326,077,900	26.73	444,398,000	36.43	24,663,900	2.02
1976	1,336,601,000[R/]	475,600,300	35.58[R/]	349,947,100	26.18[R/]	486,615,700[R/]	36.41[R/]	24,440,600	1.83[R/]
1977	1,419,482,800[R/]	525,950,300	37.05[R/]	361,732,900	25.59[R/]	505,350,400[R/]	35.60[R/]	26,449,200	1.86[R/]
1978	1,438,561,400[R/]	534,357,700	37.15[R/]	356,809,200	24.80[R/]	523,770,400[R/]	36.41[R/]	23,627,100	1.64[R/]
1979	1,405,664,600	540,945,800	38.48	342,661,900	24.38	498,105,700	35.44	23,951,200	1.70
1980	1,289,253,600	507,746,200	39.38	335,113,400	25.99	424,386,100[P/]	32.92	22,007,900	1.71

1 The amounts carried by motor carriers are estimates.

2 Products pipelines move only light petroleum products - gasoline, heating and fuel oils, liquid petroleum gas, kerosene and jet fuel.

P/Preliminary.

R/Revised.
Source: Association of Oil Pipelines

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the Chicago Region and reach the New York City area at their furthest eastward extent. In no part of this network of pipeline flows does the movement attain volume equal to the minimum flow from the South and through the Middle Atlantic Region. The product lines in the West are relatively minor regional systems and are not connected to the major trunk lines in the Mid-Continent or the East.

Regulation

Most oil pipelines are common carriers owned by major oil companies. The pipelines have been subject to commercial regulation since 1906 by the Interstate Commerce Commission (ICC) and more recently by the Federal Energy Regulatory Commission (FERC). Although most of their throughput is crude oil or petroleum products owned by parent companies, their status as common carriers requires that they accept shipments from non-owner shippers consistent with FERC rules and regulations. The pipelines, however, have considerable flexibility and opportunity to limit access in a variety of direct and indirect ways. Normally this is not a problem, but this potential for anticompetitive behavior has been the source of considerable concern in the past. Access complaints are referred to the Justice Department's Bureau of Competition.

Pipeline fees or rates have been regulated for over 40 years to prevent predatory pricing on captive shippers and to limit the amounts that pipeline companies can return as dividends to their parent companies. These regulations, however, have not been very effective and enforcement has been lax, according to most observers. Recent announcements by the FERC have indicated its intent to intervene in rate cases only upon complaint.

Since 1967, safety regulation of oil pipelines has been the responsibility of the Department of Transportation. The DOT sets the rules and regulations governing pipeline design, construction, and operation. It also investigates incidents involving spills, leaks, or explosions. Details of this responsibility are covered in chapter III.

GAS PIPELINES

The Early History of Gas Transportation 4/

As mentioned previously, both oil and gas were first discovered accidentally in drilling for salt beds. Natural gas seeps provided no convenient opportunity to capture and use the gas, and it was lost

4/ U.S. Federal Power Commission. The National Oil Survey, v. I, Chapter 2. The Resource and the Industry, Chapter 3. The Structure of the Industry, Chapter 4. Regulation and Legislation. Washington, U.S. Govt. Print. Off., 1975. p. 17-99.

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to the atmosphere. But a bore hole did allow the unplanned-for flow of gas to be captured and used. While crude oil was a nuisance and normally allowed to flow until it ceased, there were occasions when the natural gas was put to a useful purpose. One obvious opportunity was to use the accidental gas well as a source of heat to recover the salt from the brines brought to the surface from the salt beds by other wells. This opportunism was practiced by the Chinese before the time of Christ, and was mimicked by the early settlers of the United States. The streets of Fredonia, New York, were illuminated in 1825 by natural gas distributed through wooden pipes. However, blowouts, explosions, and fires at oil wells, pipelines, and storage tanks (and at the site of final consumption) were to be a problem for the gas industry throughout its history.

The gaseous form of natural gas was also a problem when one wanted to move it any great distance. As a consequence, natural gas, unlike crude oil, remained a fuel for local distribution and use for many decades. In the vicinity of oil and gas fields, the local people and businesses benefited from this supply of cheap, high-Btu, clean-burning fuel. Since some natural gas always accompanies crude oil, it was often in oversupply and frequently vented away or applied to inferior uses. Communities distant from the oil and gas fields, however, had to rely upon manufactured gas obtained from the partial combustion of coal at the local "gas works"--which tended to be less clean, contained hazardous carbon monoxide, was lower in Btu content, and was more expensive.

It was not until after World War II that natural gas finally became a national rather than a regional fuel industry. The availability of materials and technology that would make cross-country transmission possible became apparent in 1925 with the building of the long-distance all-welded pipeline from northern Louisiana to Beaumont, Texas--a distance of 217 miles. It used 14-, 16-, and 18-inch diameter pipe. The first 1,000-mile gas line was completed in 1931. The key refinements employed in this expansion of service were: large diameter pipe, high-tensile-strength steel, better compressors, improved welding, ditch digging machines, protection against corrosion, and automated control systems to handle pressure and flow.

A major event came in 1947 when the oil pipelines "Big Inch" and "Little Inch," that had been built to avoid the German submarines, were converted from oil and products to natural gas. This marked the end of the common use of manufactured gas, and by 1966 all of the lower 48 States had natural gas service. This market penetration was not so much a reflection of the efficiency of the gas pipelines, but the abundance, cheapness, and attractive qualities of natural gas. In terms of cost per Btu per mile, the gas transmission line

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is not as cheap as either ocean-going tankers or oil pipelines as a mode of transport for energy.

The interstate gas pipelines were built by separate transmission companies who linked the existing local manufactured-gas distribution companies with the petroleum producers. The petroleum producers were primarily interested in oil, but gladly sold the natural gas by-product, initially to the local natural gas distributors and later to the interstate transmission lines. Pipelines were, of course, used to gather the gas from individual wells. The transmission companies, not being involved in production itself, would contract with the producers for gas over an extended period, and then resell it to industrial consumers directly, or to distributors at the other end of the cross-country line. Their rates were essentially based on recovering the purchase cost of the gas and the cost of the transmission service provided, with a profit for their owners added. As regulated utilities, the pipelines found that exploration for and production of gas was not an attractive proposition.

As of the mid-20th century, the natural gas industry had evolved in a fashion quite unlike that of the oil industry, despite the common source of supply--the petroleum reservoir--and the common reliance on pipelines. As a consequence, the regulatory regimes were different also. Distribution companies, as local utilities, were under the jurisdiction of State commissions. Once the interstate transmission system appeared, it was placed as an interstate utility under the Federal Power Commission (FPC), which also was responsible for the interstate transmission of electricity. The production of natural gas, as is the case for crude oil, remained unregulated until 1954. At that time, the Supreme Court, in its famous Phillips decision, 347 U.S. 672 (1954), brought natural gas production for interstate use under the control of the FPC. This was to remain the case until the Natural Gas Policy Act of 1978 brought intrastate gas production under Federal control but also scheduled a series of decontrol steps for newly-discovered gas to begin in 1985.

The Gas Industry Structure Today

The natural gas industry has become an articulated system of three components, rather than being characterized by fully integrated firms, as is the case in the oil industry. The transmission companies, acting as the middleman (between the oil producers who find and produce most of the gas and the distribution system that delivers it) are held just as accountable for both the supply and the price of the natural gas being received by the customer as is the local gas company. However, the highly competitive energy markets are once again causing adjustments in the industry's way of doing business. Users and suppliers are seeking ways in which they can deal directly with one another and then require the transmission companies

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to transport that gas through their lines. Spot market transactions are now possible in addition to the long-term contracts of the past. While transmission companies still rely primarily on purchasing the gas they transport, they have become more active in exploration and production of oil and gas than in the past and do have affiliated production companies. The amount of affiliated production varies greatly from one firm to the next.

The split between transmission and distribution is not a clean one either. Some pipeline companies do distribute to end-users. There are companies that operate intrastate pipelines as well as distribute gas within that State, or a distribution system may own a transmission pipeline. Finally, pipeline companies have become involved in the manufacture of fertilizer, petrochemicals, and compressors. And they may venture into non-gas-related ventures, such as real estate.

Nonetheless, the natural gas industry does remain essentially structured as it was shaped over the past 50 years: three basic parts regulated both at the Federal and State levels. Production, transportation, and retail distribution are typically independent of each other. The companies are thus far less monolithic and much more independent than their counterparts in the oil industry.

Where the Gas Goes

The dominant sources of natural gas commerce in the United States are Texas and Louisiana. The trunk movement of natural gas northeastward from Louisiana to the Midwest (Chicago and East) is the largest bulk flow of all forms of energy in this country. A significant branch of this pattern is a parallel flow originating in Texas and Louisiana which moves toward the Eastern Seaboard.

A second major flow begins in the Texas and Oklahoma Panhandles and Southwestern Kansas and moves northeastward to Chicago and the Upper Midwest. Smaller subsidiary patterns move gas to Western States and east to Florida. There are important flows from Canada into the Pacific Northwest and from Mexico into Texas.

Despite the apparent peaking of natural gas production in the Southwest and the coincident development of spare transportation capacity in the major pipelines serving the major consuming areas, virtually all of the gas being used still comes from that region. The only major exceptions to this are the pipeline shipments from Canada and Mexico.

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FIGURE I-5.

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Gas Transmission Systems

The steel pipe used in gas transmission lines ranges up to 48 inches in diameter and averages over 20 inches. The length of major lines is normally greater than 500 miles and some exceed 1,500 miles. Because many of the line costs (such as rights-of-way, permits, and excavation) are the same for a large line as for a small one, most pipeline companies have built large diameter lines to maximize their economies of scale and have thus provided spare capacity for future expansions. A 42-inch pipeline, for example, costs only 1.9 times as much as a 30-inch pipeline, but it carries 2.4 times as much gas.

Three to five percent of the natural gas carried in a pipeline is consumed by the turbine-powered compressors which drive the gas through the lines at speeds of 10 to 25 MPH. The compressors are located in stations placed from 50 to 100 miles apart along the pipeline and are operated automatically from central control centers. The computer systems not only control the operations of the compressors which determine pressurization on the line, but they also monitor the performance of the compressors to alert the companies to the development of potential mechanical problems.

Except for some connections and extensions, virtually all gas pipelines in the United States were built before passage of the National Environmental Policy Act in 1970. As a result, environmental issues have not been a major factor in gas pipeline development in the past, although they surely will be in the future. New gas pipelines will face the same permitting difficulties to which oil pipelines have been subjected.

Construction of both gas pipelines and oil pipelines follows a common sequence. The land must be cleared to provide a treeless right-of-way for access, and a trench must be dug to receive the pipeline. After the pipe is laid, the fill is spread and compacted at the surface so that a mound will not remain. In sensitive environmental areas, such as tundra or marshes and wetlands, additional precautions may be taken to protect habitats. This sequence is illustrated by photographs of the construction, during World War II, of the Big Inch Pipeline (figures I-6 through I-26).

Excluding accidents, the transportation of natural gas by pipeline has little effect on the environment once the pipeline is operational. The pipelines are buried and, except for right-of-way markers and occasional compressor stations, they are invisible. In most areas, the surface of the right-of-way is available for the use it previously had. Fields can be plowed and roads paved over the buried pipelines. The major limitation on use is that buildings are not allowed to be built over the lines because of explosion hazards.

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Regulation

Of the total gas flow in the United States, about two-thirds is subject to Federal Regulation. 5/ There are 89 interstate pipeline companies whose revenues exceed $1 million per year each, and whose sales in aggregate account for 99 percent of the marketed gas. Of these companies, 32 carry more than 50 billion cubic feet annually and account for 86 percent of the traffic.

Interstate pipeline rates, terms and conditions of providing service, and issuance of certificates-of-necessity are set under FERC procedures. Fixed costs of the pipeline are allocated to industrial, commercial, and residential gas users by formulas based on user characteristics. Gas acquisition costs and other variable costs (such as operating expenses) are allocated directly to users on a unit-of-consumption basis. As purchased gas costs rise and fall, these changes are reflected in monthly billing adjustments through the operation of a purchased gas adjustment clause in each pipeline's tariffs.

Long-haul pipelines sell most of their gas to local distribution companies, which are regulated by State public utility commissions. Each State sets different standards for allocating its cost-of-service to consumers. Industrial tariffs are normally lower than residential and commercial rates because of the economies of larger-scale deliveries and the more consistent demand.

As regulated utilities, pipeline companies are permitted to build gas facilities as long as they satisfy a legal requirement to provide adequate and reliable service to a franchised area. Under current regulations, FERC must approve each voluntary contract-carriage arrangement and each pipeline's incentive sales program.

Gas pipelines, because of the highly explosive nature of the methane that they carry, are inherently more dangerous than oil pipelines. Since enactment of the Natural Gas Pipeline Safety Act of 1968, regulations have been adopted by the Department of Transportation which prescribe safety practices and procedures. Significant amendments to this act have been added over the years to strengthen Federal authority and direction. The political and social history of the Natural Gas Pipeline Safety Act is taken up in chapter II, and the legislative history of that Act, and its amendments, is detailed in chapter III and appendices.

5/ U.S. Dept. of Energy. Energy Information Administration. Statistics of Interstate Natural Gas Pipeline Co., 1979. DOE/EIA-0145/79. Washington, 1980. p. 263.

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PHOTO-ILLUSTRATIONS--PIPELINE CONSTRUCTION METHODS

The "Big Inch" and "Little Inch" War Emergency Pipelines, to which we referred earlier in this chapter, present a unifying illustration relating to both oil and gas pipelines. The reason for this is that these lines, built as oil pipelines by the Government during World War II, were sold to industry and converted to interstate natural gas pipelines after the War. Figures I-6 through I-26 depict the construction of the "Big Inch" Pipeline. These photographs, made by Government photographers in 1942-43, are selected and arranged here to illustrate a sequence of construction stages from beginning to end. The photo captions are contemporary to the subject, and are reproduced here as they may be found on file at the Library of Congress Prints and Photographs Reading Room.

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Figure 2-5. "Well if the state...lower changing the right of way. Before the pipe can go through, the way must be planned and leveled. This is in Pennsylvania."

FIGURE 1-7. "SLED OF TYRANTS on the right of way over Chestnut Ridge in Pennsylvania."

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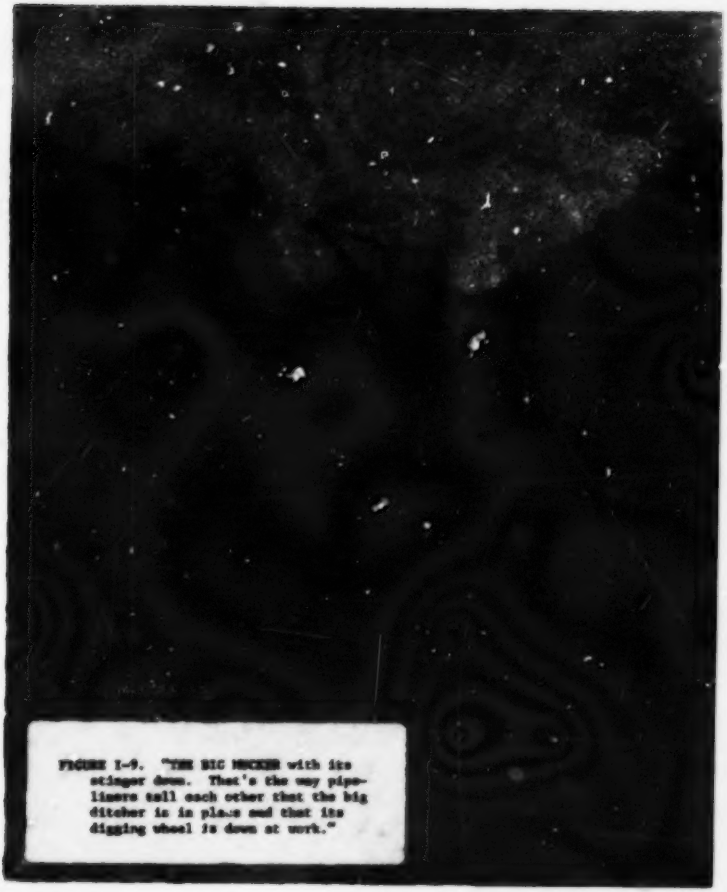

FIGURE I-9. "THE BIG MUCKER with its stinger down. That's the way pipeliners tell each other that the big ditcher is in place and that its digging wheel is down at work."

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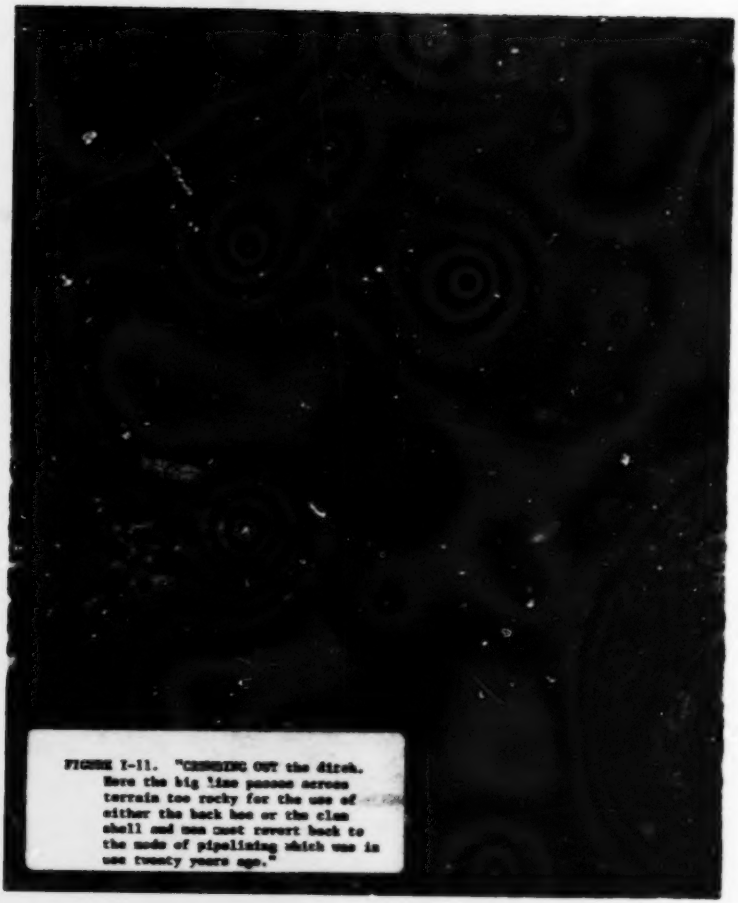

FIGURE I-11. "CRIMPING OUT the ditch. Here the big line passes across terrain too rocky for the use of either the back hoe or the clam shell and man must revert back to the mode of pipelining which was in use twenty years ago."

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FIGURE I-12. "HUGE TREE TRUNKS, cut from the right of way, are used in constructing the temporary runway for the machines over the Cache River on Section No. 5."

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FIGURE I-13. "THE SULPHUR RIVER crossing. The temporary log bridge sags under the weight of the caterpillar at the left. To the right, in the background, a 'clam shell' digger prepares the pipe ditch on the river bank."

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FIGURE I-14. "TWO TONS OF STEEL, in the air. This section of pipe is being lifted from freight car to trailer-truck for use on Section No. 3."

FIGURE I-15. "D8H CAT 'snaking' a stringer truck loaded with three stalks of Big Inch across the South Fork of Wheeling Creek in Western Pennsylvania and onto the right of way."

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FIGURE I-16. "[illegible] tells a graphic story of operations in Eastern Pennsylvania. To the right of the pipe are two 5-6 [illegible] men, working as a pair. They help each other—and other equipment—through the deep mud. The climb itself is [illegible] out a cave-in."

FIGURE I-17. "A COTTON FIELD temporarily gives way to the pipeline. Next year another crop will grow over the 'Big Inch.' A scene on Section No. 5."

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FIGURE 1-10. "THERE WAS 'ONE MORE' to this 'home study,' the night that before the soldiers took the girls and chased our way until nightfall they have hidden inside."

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FIGURE I-19. "THE 'STRINGER BEAD' is welded on a stretch of Section No. 4, and not under the most favorable working conditions. Two welders are at work on this 'bead.'"

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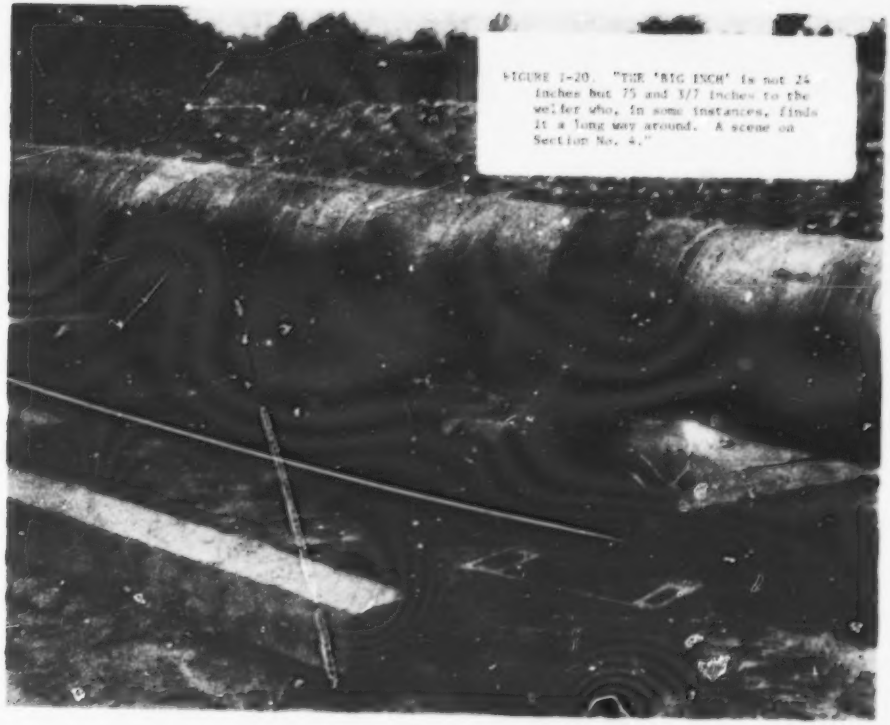

FIGURE I-20. "THE 'BIG INCH' is not 24 inches but 75 and 3/7 inches to the welder who, in some instances, finds it a long way around. A scene on Section No. 4."

FIGURE I-21. "A COMPLETED WELD. The finger points to the welder's 'autograph,' a punch-mark that identifies the work as his."

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FIGURE 1-22. "UNDER THE RAILROAD and up the hill on a stretch of Section No. 8."

FIGURE I-23. "30 FEET A MINUTE is the average speed of the 'doping and wrapping' machine. This is a scene on Section No. 4."

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FIGURE I-24. "THE COVERED PIPE is lowered carefully by 'cats' on a stretch of Section No. 4."

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FIGURE I-26. "THE CITATION", signed by Harold L. Ickes, Petroleum Administrator for War, and presented to the great organization of Americans who made the pipeline a reality."

II. THE RISE OF PIPELINE SAFETY AS A FEDERAL ISSUE--1950-1967*

ACCIDENTS AND ADVOCACY

Early Accidents

Early on Thanksgiving Day, 1950, Edwin Camiel and his brother Joseph were tramping about their brother's farm gunning for their Thanksgiving turkey. The farm--near King of Prussia, Pennsylvania--happened to be crossed by a natural gas pipeline being constructed from Texas to New York by the Transcontinental Gas Pipeline Corporation of Houston.

Transcontinental had begun pressure tests, two days earlier, of the line through this region. Firemen and police had been alerted to watch for trouble on the new section of line, and several homes had been ordered evacuated before the pressure tests began. 1/ Just the day before, a 1,000 foot section of the same new pipeline had exploded under pressure tests near Culpeper, Virginia, injuring three persons and sending flash flames 300 feet in the air. The blast had shaken windows within a four-mile radius, and was heard faintly in Culpeper, nine miles away. 2/

We do not know whether the Camiel brothers had heard of the Wednesday explosion in Virginia. We know that at one point in their Thanksgiving turkey hunt they were about 500 feet from the pipeline right-of-way when a blast ripped the Earth with terrific force, tearing up a mile of the section being tested, and "rocking [the] fertile farm area for seven miles."

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* Prepared by David Hack, Analyst in Social and Physical Science, Science Policy Research Division. The sections on industrial code development for pipeline safety, and pipeline policy in the States, were researched and drafted by David Cheney, Analyst in Science and Technology, Science Policy Research Division.

1/ U.S. Congress. Congressional Record, Dec. 19, 1950. p. 16754.

2/ Ibid. Also: The Washington Post, Nov. 24, 1950 (Associated Press photo caption). p. 17.

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Although the two brothers were "hurled into the air by the force of the blast," they were fortunate to suffer only bruises and a sprained ankle.

> Blinding flames shot 300 feet in the air and seared trees and grass.
>
> Huge chunks of the metal pipeline were thrown with rocket speed into fields. Windows in homes miles from the explosion were shattered . . . .
>
> Two outbuildings on the farm of Peter Camiel, where the blast originated, were destroyed by flames that baked the Earth for 150 feet on both sides . . . .
>
> More than 100 fire engines from a score of small communities in the vicinity . . . rushed equipment to the scene. 3/

A few days later, on December 5, 1950, a section of the Tennessee Gas Transmission Pipeline Company line exploded near Greenville, Mississippi, killing two persons and injuring two others. It was reported that the "terrific blast . . . tossed debris 250 feet in the air and [the] resulting fire scorched a strip of ground an eighth of a mile wide. Those killed and injured were workmen . . . installing four 26-inch lines across the Mississippi River." 4/

Congressman John Heselton and the Federal Power Commission

On December 14, 1950, Representative John Heselton of Massachusetts telephoned Nelson Lee Smith, a Commissioner of the Federal Power Commission. He sought help in developing information in support of a pipeline safety bill. 5/ The Congressman requested a list of previous pipeline explosions from the Federal Power Commission. He was told there was no such information available because the Commission had no authority or duty in connection with such explosions. 6/

3/ Congressional Record, Dec. 19, 1950. p. 16754.

4/ Ibid.

5/ Later introduced as H.R. 9933, 81st Congress.

6/ Congressional Record, Dec. 19, 1950. p. 16754.

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The following week Heselton introduced his bill to the House of Representatives, saying: "I think all of us will recall reading in the latter part of November of the [pipeline] explosions in this vicinity . . . on two successive days." 7/

Actually, if his colleagues had not seen the November stories of pipeline explosions, it could be understood. The main front page story on Thanksgiving day, for both The [Washington] Evening Star and The Washington Post newspapers, had been the Thanksgiving eve collision of two Long Island commuter trains, killing 76 people and injuring more than 150. The horror of the carnage was graphically described in multiple and lengthy stories, beginning on page 1. 8/ The Evening Star reported only the Virginia pipeline accident, on page B-1 of Thanksgiving Day's paper. 9/ The Washington Post published only a photo from the Pennsylvania accident (on Friday, page 17) and reported both accidents in the caption of the one photo. 10/ The front pages of both newspapers on Friday carried stories of Pacific Commander General Douglas MacArthur's daring, surprise flight, with civilian war correspondents aboard, 60 miles behind enemy lines to the Yalu River, in Korea. 11/

Although the press had not featured very prominently the stories of pipeline accidents in Virginia and Pennsylvania, Congressman Heselton had other reasons to be concerned about gas pipeline safety. He was interested in particular, he said, because of the planned construction through Massachusetts, and across his 1st Congressional District, of "144 miles of 120-inch [sic] line . . . ." He was also aware of "268 miles of somewhat smaller capacity line to be constructed in Connecticut and New Hampshire." 12/

Three years earlier (July 25, 1947), the Congress and the President had given gas pipeline companies the power of eminent domain--to take or cross land--under Federal law (U. S. Code, Title 15, section 717f, subsection (h)). We do not know whether Rep. Heselton had been approached by constituents from his first district on this matter, but we know that he told the Congress:

7/ Ibid.

8/ The Evening Star, Nov. 23, 1950. p. 1. The Washington Post, Nov. 23, 1950. p. 1.

9/ The Evening Star, Nov. 23, 1950. p. B-1.

10/ The Washington Post, Nov. 24, 1950. p. 17.

11/ The Evening Star, Nov. 24, 1950. p. 1. The Washington Post, Nov. 24, 1950. p. 1.

12/ Congressional Record, Dec. 19, 1950. p. 16754

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> When the pipeline companies had to negotiate for contracts or right-of-way, the owner of the real estate could include consideration of the safety factor in the negotiations for such contract. Now, with the [pipeline companies having the] power of eminent domain, he is certainly more limited in his ability to make a satisfactory contract.
>
> I have conferred with the counsel for the Federal Power Commission and he advises me that under existing law, the only power the Commission has with reference to safety requirements [is] in connection with the normal conditions which may be incorporated into the initial certificate. 13/

Representative Heselton went on to say:

> . . . Now, with these large lines carrying heavy potential explosive possibilities into more and more congested areas the matter is becoming increasingly urgent.
>
> I realize that it is practically impossible to obtain any immediate consideration of [my] proposal at this session of Congress. But I do think it important that the bill be filed so that the Commission or any other agencies interested can begin work on their reports so that they can be made available early in the next session of Congress, and I shall refile the bill when that Congress convenes. 14/

When the 82nd Congress convened, Representative Heselton did indeed refile his bill (H.R. 88), and Senator Saltonstall filed a similar bill in the Senate (S. 1699). These bills, had they become law, would have amended the Natural Gas Act to ". . . authorize the Federal Power Commission to prescribe safety regulations with respect to the construction, operation, and maintenance of interstate natural gas facilities." 15/

13/ Ibid.

14/ Ibid.

15/ U.S. Federal Power Commission. Thirty-first Annual Report of the Federal Power Commission, Fiscal Year Ended June 30, 1951. p. 125.

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The Federal Power Commission's Response to the Heselton Initiative

The Federal Power Commission commented favorably on the Heselton and Saltonstall bills in its Annual Report. 16/

In subsequent Congresses, the Heselton bill was repeatedly re-introduced, and the Federal Power Commission repeatedly endorsed it. In 1953, Rep. Heselton introduced H.R. 134 into the 83rd Congress. The Commission, in its 33rd Annual Report, for FY 1953, said that "H.R. 134 . . . is identical with [bills in the 81st and 82nd Congressess], upon each of which the Commission has reported favorably." 17/ In the legislative recommendations section of its Report the Commission recommended " . . . that section 7 of the Natural Gas Act be amended so as to authorize the Commission to prescribe safety regulations with respect to the operation of interstate natural-gas pipelines." 18/ This recommendation seemed to imply, but left unstated, that "operation" of pipelines might include also their design and construction. The recommendation was repeated in the 34th Annual Report, for FY 1954. 19/

Hearing on the Heselton Bill

In a hearing held on H.R. 134, by the House Committee on Interstate and Foreign Commerce on June 10, 1954, Representative Heselton testified regarding his bill and requested witholding action:

> Certain representatives of the industry came to see me and told me very frankly and honestly, that they felt there was a need for an improved and revised code and asked whether I would be willing to defer any action on the legislation pending an effort on their part to develop such a code. I told them I would be very glad to do so . . . . Therefore, I am not interested in having the bill enacted until that action is completed. 20/

16/ Ibid.

17/ U. S. Federal Power Commission. Thirty-third Annual Report. June 30, 1953. p. 152.

18 Ibid., p. 155.

19/ U.S. Federal Power Commission. Thirty-fourth Annual Report, June 30, 1954. p. 171.

20/ As quoted in: U.S. Congress. Senate. Natural Gas Pipeline Safety. Report no. 733, 90th Cong., 1st sess. (to accompany S. 1166), Nov. 7, 1967. p. 6.

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Subsequently, the industry code committee conducted extensive activity revising the code. The code they undertook to revise already had a considerable history.

INDUSTRIAL CODE DEVELOPMENT FOR PIPELINE SAFETY

Development of pipeline industrial codes had begun much earlier in the century; the pipeline industry developed its own codes for the design and construction of pipelines. These codes, like the industrial codes for other equipment, were not exclusively for safety but were primarily to standardize dimensions and ratings so that parts from different manufacturers would fit together compatibly and interchangeably. 21/

The pipeline industry code had been written to provide:

-- engineering rules for the designer;

-- piping system requirements suitable for referencing in a job specification as a contractual agreement between purchaser and contractor; and

-- rules suitable for adoption into law by a governmental regulatory authority. 22/

The industrial code for pipelines had its roots in the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, which addressed the problem of exploding boilers. This code originated in an 1884 performance test code, which prescribed procedures for testing boilers. 23/

Interest in a national code for pressure piping had developed around World War I, and the need for such a standard became more

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21/ For a general discussion of industrial standards, see U.S. Congress. House. Committee on Science and Astronautics. Subcommittee on Science, Research and Development. Industrial Standards in the United States: An Overview of their Evolution and Significance for the Congress. Report Prepared by the Science Policy Research Division of the Congressional Research Service. Washington, U.S. Govt. Print. Off., 1974.

22/ Pandorf, E. C., and D. W. Moody, Jr. The ANSI/ASME Code for Pressure Piping B31: Its Past, Present and Future. Mechanical Engineering, June 1985. p. 92-95.

23/ Telephone interview with staff of the American Society of Mechanical Engineers (New York).

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evident from 1915 to 1925. 24/ In 1925, the American Engineering Standards Committee, a forerunner of the American Standards Association (ASA), formed a committee to develop a piping code. 25/ This code was to be a companion to the boiler and pressure vessel code. Almost a decade later, in 1935, this committee produced the first edition of the American Tentative Standard Code for Pressure Piping (designated B31). This first edition was directed primarily toward power plants and industrial installations. 26/

The code was soon broadened in scope and expanded in detail. It was revised in 1942 and supplemented in 1944 and 1947. Following a reorganization of the code committees in 1948 to provide additional expertise, the 1942 code and supplements were reviewed and revised into a greatly expanded form. This new form contained general rules for design, dimensions, materials, allowable stresses, and fabrication--and had chapters to cover specialized applications. This code was published in 1951, and designated B31.1-1951.

In 1952, stimulated by the pipeline safety legislation proposed in Congress by Representative Heselton, code committee attention began to focus specifically on piping systems for gas transmission and distribution. 27/ The B31 code committee established a "Subcommittee Eight," and subsequently published B31.8-1952, a code for pipeline safety that did not require cross referencing to the comprehensive B31.1 document. This first version of the B31.8 code was mainly a reorganization of material in the composite B31 document, and was not yet a comprehensive code for gas distribution and transmission. 28/

In 1953 and 1954, Subcommittee Eight prepared and circulated a series of drafts to enlarge substantially the B31.8 code. 29/ By

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24/ Pandorf and Moody, The ANSI/ASME Code for Pressure Piping.

25/ The ASA later changed its name to the United States of America Standards Institute--and, still later, to the American National Standards Institute (ANSI).

26/ Pandorf and Moody, the ANSI/ASME Code for Pressure Piping.

27/ Inglis, J. H. Draft Report on Natural Gas Pipeline Safety (Administrative History: Federal Power Commission, v. 1, part 8). Typescript (20 pages plus appendix). August 1, 1968. p. 2. Lyndon B. Johnson Library. Austin, Texas.

28/ Inglis, op. cit. (Appendix: Resume' of B31.8 Code Committee Activities. p. 1.)

29/ Ibid.

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1953, the code lacked only provisions for more stringent requirements for piping in areas where more people were at risk. 30/

The final document promised to Representative Heselton, and mentioned by him in the 1954 hearings, was completed by the ASME in 1955. There is apparently no record, in the Congressional Record or House Commerce Committee proceedings, of Representative Heselton's receipt of, or comment on, the code committee's work.

After the code was issued in 1955, the ASME code committee sharply reduced its activity level and began to meet only annually. The code was revised in 1958 and 1963. Supplements were issued in 1964 and 1965. The principal reasons for changes in the code in this period were inquiries from companies using the code and changes to other standards and specifications referenced in the code. According to a Federal Power Commission historian, the FPC had a staff representative on the code committee through at least some portion of the period of code revision activity. 31/

ACTIVITY BY THE FEDERAL POWER COMMISSION AND IN CONGRESS--1955-1958

The Federal Power Commission, in its 1955 annual report, seemed to hedge its endorsement of Rep. Heselton's 1955 bill (H.R. 433, 84th Congress), saying, "Similar proposals which the Commission has favored have been pending in earlier Congresses, and are, among others, included in S. 1880 in the present Congress." 32/ The Commission, however, restated its previous legislative recommendation without qualification, and in the same words as in previous years. 33/ In its 36th Annual Report (FY 1956) the Commission repeated its endorsement of these 84th Congress bills. 34/ In its 37th and 38th

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30/ Elder, Lee (Columbia Gas). Telephone interview, Sept. 1984.

31/ Inglis, op. cit. (Appendix, p. 1, 3.) Also see: Pandorf and Moody, the ANSI/ASME code for Pressure Piping B31. The other B31 code sections (as of 1984) were: B31.1, Power [Station] Piping; B31.2, Fuel Gas Piping [on the gas consumer's property]; B31.3, Chemical Plant and Petroleum Refinery Piping; B1.4, Liquid Petroleum Transportation Piping Systems; B31.5, Refrigeration Piping; B31.7, Nuclear Power [Plant] Piping; B31.9, Building Services Piping; and B31.11, Slurry Piping Systems.

32/ U.S. Federal Power Commission. Thirty-fifth Annual Report (FY 1955) June 30, 1955. p. 179.

33/ Ibid., p. 182.

34/ U.S. Federal Power Commission. Thirty-sixth Annual Report, June 30, 1956, p. 19.

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Annual Reports (Fiscal Years 1957 and 1958) the Commission again endorsed Representative Heselton's 85th Congress bill, H.R. 2809, and repeated the legislative recommendation. 35/

At the end of the 85th Congress (1958) Representative John Heselton, the sponsor of FPC-endorsed pipeline safety bills since 1950, retired from Congress. 36/ Apparently, no other member of Congress took up Heselton's special interest in pipeline safety legislation.

THE FEDERAL POWER COMMISSION'S CUSTODIANSHIP OF THE HESELTON INITIATIVES--1959-1965

The Federal Power Commission, however, continued mildly supporting the idea of legislation to authorize the Commission to issue safety regulations. The FPC for several years took no particular note of any trend in reported accidents. Indeed, there was still apparently little or no activity at the FPC to keep track of any accident statistics. Much later, it was recorded that there were from zero to five deaths of interstate gas pipeline employees each year from 1950 to 1964--and from zero to three members of the public killed each year--by explosions of interstate gas pipelines only. 37/

In its 39th Annual Report (FY 1959) the Federal Power Commission repeated its familiar safety legislation recommendation, and endorsed the 86th Congress bills S. 2256 and H.R. 3286--which, it said, would carry out the recommendation. 38/ In its 40th Through 42nd Annual Reports (FY's 1960, 1961 and 1962) the Commission repeated the recommendation but did not mention any bills on the subject. 39/

In its 43rd Annual Report (FY 1963) the Commission noted that: . . . while a number of bills to implement some of these proposals were introduced during the 1st session of the 88th Congress, no

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35/ U.S. Federal Power Commission. Thirty-seventh Annual Report (FY 1957). June 30, 1957. p. 19, 25. Thirty-eighth Annual Report (FY 1958). June 30, 1958. p. 17.

36/ Congressional Record, Aug. 23, 1958. p. 19645.

37/ U. S. Congress. Senate. Committee on Commerce. Safety of Interstate Natural Gas Pipelines. Washington, U. S. Govt. Print. Off., April 19, 1966. p. 19.

38/ U.S. Federal Power Commission. Thirty-ninth Annual Report (FY 1959). June 30, 1959. p. 20.

39/ U.S. Federal Power Commission. Fortieth Annual Report, June 30, 1960. p. 18. Forty-first Annual Report, June 30, 1961. p. 3. Forty-second Annual Report, June 30, 1962. p. 16.

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hearings [were held nor was] any other action . . . taken on any of our suggestions . . . . 40/ The Commission then set forth the principal matters to which it then believed Congress should give its early attention. Pipeline safety was not mentioned. Instead, the Commission proposed two other amendments to the Natural Gas Act, neither dealing with pipeline safety regulation. 41/ An appendix to the Report listed the bills introduced in the first session of the 88th Congress, to implement FPC recommendations. No bill to authorize safety regulation was listed. 42/

The Commission took a slightly stronger posture in its 44th Annual Report (FY 1964). The Commission renewed its proposal to Congress for authority to regulate pipeline safety. Also, apparently for the first time in all its Annual Reports beginning with that for 1951, the statement of the recommendation was accompanied by a brief explanation of the recommendation. 43/ However, the appendix of 88th Congress bills embodying FPC recommendations again failed to include any bill on pipeline safety regulation. 44/

THE EXPLOSION AT NATCHITOCHES, LOUISIANA (MARCH 4, 1965)

Things changed somewhat after a terrible pipeline explosion in 1965. In its 45th Annual Report (FY 1965) the Commission repeated the safety recommendation that it first made in 1951, but elevated the recommendation to first importance. Its wording was essentially the same as in every Annual Report (save two) since 1951: "authorization to prescribe safety standards for the construction and operation of interstate natural gas pipelines." This time, however, the Commission noted that:

> The loss of 17 lives in the gas pipeline explosion which occurred at Natchitoches, Louisiana, on March 4, 1965, emphasizes the national importance of natural gas pipeline safety. 45/

The Natchitoches explosion--and accounts of it--had apparently siezed the attention of the Commission.

40/ U.S. Federal Power Commission. Forty-third Annual Report (1963). June 30, 1963. p. 3.

41/ Ibid., p. 3-5.

42/ Ibid., p. 157-8.

43/ U.S. Federal Power Commission. Forty-fourth Annual Report (FY 1964). June 30, 1964. p. 10.

44/ Ibid., p. 159.

45/ U.S. Federal Power Commission. Forty-fifth Annual Report (FY 1965). June 30, 1965. p. 4.

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Dr. Charles E. Cook, coroner of Natchitoches Parish, got to the scene of the Natchitoches explosion 17 minutes after the event, and described it in his report.

> I took some photographs of that gigantic, impressive, roaring fiery torch. The escaping gas exploded and it appeared as though a giant blowtorch had been set off . . . . The houses and garage were totally demolished as were several cars and trucks; also some of the livestock were killed.
>
> The undertakers on the scene were instructed to label their disaster packs as to the location [in which] the bodies were discovered to aid identification. A total of two boxes of chalky bones and charred flesh were found scattered throughout three houses where the deaths occurred. We were able to locate only 16 separate bodily remains; however there were bones found at the location which could correspond with the missing body, completing a total of 17 victims who perished in the fire. 46/

The Federal Power Commission's Final Staff Report on the disaster revealed the Commission's lack of experience in safety regulation and accident analysis. The Commission's Bureau of Natural Gas said in the Staff Comments and Recommendations section that

> . . . the Commission staff is not presently equipped to determine the specific cause of the failure. Accordingly, we must content ourselves with the observation that all three of the investigatory reports, as well as the Bureau of Standards review thereof, reach the conclusion that the accident probably resulted from stress-corrosion cracking, with the initial corrosive agent being unknown, and the stress coming from residual stresses

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46/ Condensed by Drew Pearson in The Washington Merry-Go-Round (column), Copyright 1965, by Bell-McClure Syndicate. Release Friday, June 18, 1965.

Original source: Cook, Charles E., M.D. (Coroner, Parish of Natchitoches, Louisiana). Coroner's Investigation, Tennessee Gas Pipeline Explosion (report). Mar. 16, 1965. 3 p.

The coroner's report from which the Pearson condensation was taken was reproduced in full as Appendix V, in: U.S. Federal Power Commission. Bureau of Natural Gas. Final Staff Report on Investigation of Tennessee Gas Transmission Company Pipeline No. 100-1 Failure Near Natchitoches, Louisiana, Mar. 4, 1965 (Docket No. CP65-267). Washington, D.C. Aug. 12, 1965. (Archives of the Federal Power Commission, U.S. National Archives.)

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FIGURE II-1. Air View of the Explosion Site at Natchitoches, Louisiana (Arrow marks the point of rupture)

SOURCE: U.S. Federal Power Commission Final Staff Report. Docket No. CP65-267.

62

NINE PERSONS were killed in this home when a natural gas pipeline exploded near Natchitoches yesterday. Seventeen persons were killed altogether and several others injured. Five homes were destroyed in the pre-dawn explosion and fire. (Times Photo by Langston McEachern)

THIS OVER-ALL VIEW shows the death scene near Natchitoches where 17 persons died early yesterday in an explosion and fire. The flames seared the branches of trees, leaving only the smouldering trunks seen here. (Times Photo by Langston McEachern)

FIGURE II-2. The Destruction at Natchitoches, Louisana (The Shreveport Times--March 5, 1965)

Source: FPC Final Staff Report. Reprinted by permission of the Shreveport Times.

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FIGURE II-3. Schematic Diagram: How the Fractures Progressed Through the Pipeline At the Time Of Failure

Source: PPC Final Staff Report.

64

FIGURE II-4. Close-Up of the Pipe Adjacent to the Pipe Fracture Origin

Source: FPC Final Staff Report.

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> inherent in the manufacture of the pipe as well as from outside forces.
>
> It is necessary to obtain further information, both history of failure experience and present construction and maintenance practices before the necessity for a specific program can be determined. In this regard the Commission has proceeded with . . . a questionnaire to the pipeline industry designed to secure information of this nature. 47/

In the FPC's 1965 Annual Report, the Commission said that the bills S. 1553 and H.R. 5872 had been introduced in the 89th Congress, at the Commission's request. These bills were designed to implement the Commission's renewed request for authority over the construction and operation of interstate natural gas pipelines. 48/ The Commission further noted that the Office of the Undersecretary of Commerce for Transportation had recommended in 1963 that the Commission be given this authority. The Commission explicitly advocated congressional hearings on the subject, saying:

> Congressional hearings on the Natural Gas Pipeline Safety bill would provide an opportunity for a more detailed exploration of this important matter of public safety and would enable the Federal Government to cooperate with the natural gas industry and the States in devising the most appropriate methods of safety regulation. The extent of the need for the Federal Government becoming involved in prescribing or enforcing safety standards merits a congressional review and determination. 49/

The following year, in its Forty-sixth Annual Report (FY 1966) the Commission was emphatic.

> The Commission recommends continued congressional study leading to explicit Federal authority . . . . A survey of pipeline failures made by the Commission for the Senate Committee on Commerce showed that, while the gas pipeline industry has

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47/ FPC Final Staff Report on Investigation. p. 15-17.

48/ U.S. Federal Power Commission. Forty-fifth Annual Report. p. 159.

49/ Ibid., p. 4-5.

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> a low casualty record, there is a high potential danger to the public from the transmission of natural gas. The Commission believes that there is at present inadequate public review of the safety practices of interstate natural-gas companies. The safety implications of the operation of interstate natural gas pipelines become more acute each year as suburban areas develop on land surrounding high-pressure pipelines and as older pipe, laid before modern protective techniques were developed, is subjected to the deteriorating effects of age. Natural gas pipelines are the only remaining instrumentalities of interstate commerce for which Congress has not enacted a general safety statute. 50/

Through its Annual Reports, from 1951 to 1964, the FPC had maintained a comfortable position. Its recommendations for action by Congress had put the FPC on record as favoring pipeline safety regulation, but also as believing that it had no authority to undertake such regulation. These recommendations were barely more than footnotes in the Annual Reports in which they appeared, and they became "footnotes to history" in the end.

In the 1965 Annual Report, the FPC seemed to begin to press enthusiastically for legislation, and, just before the FY 1966 Annual Report was sent to the printer, the Commission took note in it that the Senate Commerce Committee had begun hearings on S. 1553 (August, 1966). Even at this advanced date, however, the Commission's position was not unanimous. The report noted that, in the hearing conducted on S. 1553, Commissioner O'Connor expressed reservations with regard to the appropriateness of safety legislation "at this time." Commissioner O'Connor's position had been described in the 1965 Annual Report as in opposition to the recommendation as presently drafted for it infringes on an area more properly committed to the police powers of the State." The Report further said: "[Commissioner O'Connor] is of the opinion it would cast the Federal Government in the role of safety endorser and may unduly hamper private research efforts." 51/

PIPELINE SAFETY POLICY IN THE STATES

In view of Commissioner O'Conner's minority opinions in 1965 and 1966 that pipeline safety programs should continue to be conducted by the States and not by the Federal Government, it is illuminating to look back at State pipeline safety programs.

50/ U.S. Federal Power Commission. Forty-sixth Annual Report (FY 1966). June 30, 1966. p. 9-10.

51/ Ibid., and Forty-fifth Annual Report, p. 4.

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State Pipeline Safety Programs--1951-1966

The first State pipeline safety regulation followed an explosion in Brighton, New York, on September 21, 1951. 52/ This accident was caused by an explosion in a regulator vault of a gas distribution system. The explosion opened the regulator, allowed high-pressure gas into a low-pressure distribution system, and overloaded gas appliances in many buildngs, causing explosions and fire. Three people died and thirty were injured; nineteen homes were destroyed and twenty-five other buildings were seriously damaged. 53/

As a result of an investigation following these explosions and fires the New York Public Service Commission on November 7, 1952, adopted a series of pipeline safety rules and safeguards. These were largely based on the ASA code B31.8-1952, but were more specific and in some cases more stringent. 54/

Other States followed New York in adopting regulations based on the B31.8 code. By 1960, 14 states had pipeline safety codes generally based on B31.8. 55/ By 1966, when the Senate Commerce Committee was conducting hearings on safety legislation, 26 States had safety codes--and 25 of these codes were based in some way on B31.8. 56/ Many of the industrial States had safety codes, but most major gas producing States, including Texas, Louisiana, and Oklahoma, did not.

52/ New York Public Service Commission. Historical Review of Public Service Commission Gas Safety Code. Code 15686 NYCRR, part 255. Unpublished.

53/ The National Board of Fire Underwriters and The New York Fire Insurance Rating Organization. The Brighton Fire and Explosion Castastrophe, Sept. 21, 1951. New York, 1952. 25 p.

54/ New York State Public Service Commission. Opinion of the Commissioner, Case 15686--Proceeding on the Motion of the Commission as to the Apparatus and Property and the Method Employed by Gas Corporations, Gas and Electric Corporations and Municipalities Supplying Gas in the Transmission, Distribution and Sale of Gas. Nov. 7, 1953. p. 26-37.

55/ U.S. Congress. Senate. Committee on Commerce. Safety of Interstate Natural Gas Pipelines. Committee Print. Report by the U.S. Federal Power Commission. Washington, U.S. Govt. Print. Off., 1966. p. 125, 126.

56/ Ibid.

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State Pipeline Safety Activities--1966-1968

Following the 1966 Senate hearings, the National Association of Regulatory Utility Commissioners (NARUC) pushed for the adoption of gas safety regulations in the States that had not yet adopted codes. 57/ As a result, 47 States had adopted pipeline safety requirements by 1968.

Many of the State codes modified the B31.8 code in some way. Several States wrote their codes to make provisions of the B31.8 code mandatory instead of voluntary. Some States added or strengthened selected provisions of the B31.8 code. 58/

It is useful to look next at the perceptions of the middle 1960s about the B31.8 code and the State laws or regulations based on it.

Problems with B31.8, and the State Pipeline Codes

By the mid-sixties, the B31.8 code had become a fairly comprehensive standard. It recommended or specified materials, design, construction, maintenance, and testing of pipelines. It covered lines moving gas from the producer's wellhead to the final customer's meter. Nevertheless, many people felt that State regulations based on these codes were inadequate. The concerns centered on two areas: questions about the adequacy of the B31.8 code itself, and questions about the adequacy of the States' implementation of that code.

Questions About The Adequacy Of The B31.8 Code

Code B31.8 was seen to have several deficiencies as a safety regulation. First, it was advisory, not mandatory, and there was no enforcement effort by the industry. By 1966, only one State, California, had drafted its regulations to make B31.8 mandatory rather than optional. Elsewhere, some companies exceeded the requirements in the code, while others didn't meet the requirements. 59/

Second, the code did not apply retroactively--when revisions were made to make the code more stringent, they did not apply to the pipe

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57/ Inglis, Departmental Histories Project Draft Report on Natural Gas Pipeline Safety, p. 14.

58/ U.S. Congress. Senate. Committee on Commerce. Hearings. Natural Gas Pipeline Safety Regulation. Apr. 19, 1967. 90th Cong., 1st sess. Washington, U.S. Govt. Print. Off., 1967. p. 34. Statement of Lee C. White, Chairman, Federal Power Commission.

59/ Myerson, Report on Gas Pipeline Failures, p. 5.

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already in the ground. 60/ Thus there was no assurance that the aging pipe, possibly corroding in the ground, was as well maintained and upgraded as current regulations would require.

A third objection to the industry code stemmed from the process by which the code was developed. The code was written by a committee of the American Society of Mechanical Engineers, following the guidelines of the American Standards Association. (Thus, it was sometimes called an ASME/ASA code.) The engineers who developed the code were, for the most part, directly or indirectly employed by the industry. Ralph Nader, in testimony before the Senate Commerce Committee, charged that the ASME committee was ". . . designed to perpetuate the dominance of industry via the technical societies . . ." and that the meetings were not sufficiently open to the public and other interested parties. 61/ In addition, the standards were adopted by consensus of the committee, which meant that a minority could prevent a more stringent standard from being adopted. Some people thought that this made the B31.8 code inappropriate as a basis for public regulations because it meant that the most careful practices represented on the committee were not likely to become the standard.

Questions About The States' Implementation of the B31.8 Code

Although, by 1968, most States had implemented some sort of pipeline safety regulations, there were gaps in these State regulations. Some States did not cover distribution systems or gathering systems, others did not cover interstate pipelines. Most States were unable or unwilling to provide the technical and financial resources to determine fully and enforce compliance with their regulations. Few States had the technical expertise to modify parts of the code for their own special circumstances and few had the manpower to enforce the codes. 62/

A more fundamental limitation appeared when pipelines crossed State lines. It was clearly inefficient and expensive for a pipeline company to have to meet different regulatory requirements on different

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60/ Statement of Lee White. Senate. Committee on Commerce. Hearings. Natural Gas Pipeline Safety Regulations. 90th Cong. 1st sess. Apr. 19, 1967. Washington, U.S. Govt. Print. Off., 1967. p. 33.

61/ U.S. Congress. Senate. Committee on Commerce. Hearings, Natural Gas Pipeline Safety Regulation. Apr. 19, 20, and Sept. 1, 2, and 3, 1967. 90th Cong., 1st sess. Washington, U.S. Govt. Print. Off., 1967. p. 193. State of Ralph Nader.

62/ Ibid.

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parts of the pipeline. Gas industry groups such as the American Gas Association favored uniform national standards for this reason. 63/

In addition, some States did not amend their regulations to incorporate improvements in the updated ASA code. For example, in the mid-sixties, several States were still using the 1955 ASA code, even though two subsequent revisions had made it more stringent. 64/

A SUMMARY OF PIPELINE SAFETY POLICY--1951-1968

An official historian of the Federal Power Commission characterized Federal pipeline safety policy of the 1950s and 1960s as follows:

> The natural gas safety story during the years 1965 through 1968 can be fairly portrayed only against the background of actions and non-actions by Congress, the FPC and the gas industry during the preceding 13 years, from 1951 through 1964. These were years of inaction for the most part . . . .
>
> Those who search this record may find a number of typical symptoms of Government non-action: Congress unwilling to act on a problem which had not yet reached page one dimensions; general confusion as to whether responsibility rests at the Federal or State level; the FPC in the comfortable position of disclaiming authority to attack the problem and at the same time routinely asking Congress to give it such authority; and the pipeline companies each going their own separate ways on pipeline safety while an industry code committee pursued generalized non-enforceable safety objectives at a fairly leisurely pace. Everyone involved was in a reasonably defensible posture while action on a serious national problem was

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63/ U.S. Congress. Senate. Committee on Commerce. Hearings. Natural Gas Pipeline Safety Regulations. Apr. 19, 1967. 90th Cong., 1st sess. Washington, U.S. Govt. Print. Off., 1967. p. 52. Statement of H. Donald Borger, representing the American Gas Association.

64/ Myerson, Melvin R. (National Bureau of Standards). Report on Gas Pipeline Failures Submitted to Dr. J. Herbert Hollomon, Assistant Secretary of Commerce for Science and Technology. Oct. 27, 1966. p. 14.

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> stalled on dead center some place between FPC and the Congress. 65/

By the middle-sixties, several clearly-defined groups had an interest in the pipeline safety issue: Members of Congress; the Federal Power Commission; a complex of private, industrial standards setting committees; and the legislative and regulatory bodies of the individual States. But there was not yet continuing, close attention by the media, or an organized and articulate public opinion, or a clearly visible national champion for gas pipeline safety.

THE CONSUMER INTERESTS ISSUE IN THE SENATE AND PRESIDENCY

President Kennedy's Promise To Consumer Groups

There is little evidence that John F. Kennedy gave specific attention to pipeline safety in 1960--as he campaigned successfully first for the Democratic nomination and then for the Presidency. Nonetheless, one of his campaign promises led to a broad commitment to consumer issues that was later adopted and amplified by his successor, Lyndon B. Johnson. Esther Peterson was President Kennedy's Assistant Secretary of Labor. She subsequently served President Johnson in the same post and concurrently served as Special Assistant to the President for Consumer Affairs. In an interview, she told the story:

> You see, Kennedy had campaigned on consumer issues. He had said that he would appoint a consumer council if he were elected, and the consumers kept pressing him, "When are you going to set up a consumer council?" They did set up the consumer advisory council to the Council of Economic Advisors. I know the consumer groups felt that this was not a complete carrying out of what Kennedy had [promised] . . . if I recall it was in October of 1963 . . . I remember [Kennedy's appointments advisor] Ralph [Dungan] calling me . . . and saying that they wanted me to come over [to the White House], that President Kennedy was interested in my coming over full time on the staff as consumer advisor, and it was to fulfill his campaign promise . . . . The offer that came to me was from Kennedy. 66/

65/ Inglis, J. H. Draft Report on Natural Gas Pipeline Safety. p. 7-8. Administrative History Files of the Johnson Administration (Federal Power Commission). Lyndon B. Johnson Library.

66/ Esther G. Peterson. Oral history transcript, Interview I., Nov. 25, 1968, Lyndon B. Johnson Library, Austin, Texas. p. 7-8.

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Within a month, President Kennedy was dead--shot by an assassin in Dallas--and Vice President Lyndon Johnson succeeded to the Presidency.

Mrs. Peterson's account continues:

> When was I appointed by Johnson? . . . January 3, 1964, is correct.
>
> [Interviewer:] So what Mr. Johnson did was pick up a Kennedy program here[?]
>
> Right. 67/

President Johnson Adopts the Consumer Issue

Esther Peterson further told the interviewer:

> When [Johnson] asked me to be the consumer advisor, we went to [Johnson's] ranch . . . and came back, and the first assignment I had was to draft a consumer message, and it was to follow up what Kenned,'s [consumer] message had said and done. 68/

When President Johnson delivered that consumer message, he said that the interest of the Federal Government in consumer protection was not new, and he cited instances of early and particular consumer-protection laws. He continued:

> What is new is the concern for the total interest of the consumer, the recognition of certain basic consumer rights: The right to safety . . . .
>
> President Kennedy--in his historic consumer message of March 15, 1962--first set forth those rights. I reaffirm those rights.

President Johnson further asserted:

> My Special Assistant and the new Consumer Committee will lead an intensified campaign: To assure that the best practice of the great American marketplace . . . becomes common practice . . . to identify the gaps in

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67/ Ibid.

68/ Ibid.

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> our system of consumer protection . . . that still need to be filled. 69/

At this time, 1964, pipeline safety was neither a public nor a Presidential issue. It had received some attention in Congress and by the Federal Power Commission earlier, but had not yet been identified as an issue for inclusion in the Administration's newly rejuvenated consumer protection program. This would soon change.

On Capitol Hill about this time, Senator Warren G. Magnuson was preparing to hire a new staff member, Michael Pertschuk, to pursue consumer legislation aggressively. 70/

Senate Commerce Committee Chairman Warren G. Magnuson

Warren G. Magnuson was first elected to Congress in 1936. As a young Representative from the State of Washington he sought to get on the Naval Affairs Committee because his district included the Bremerton Navy Yard. Soon after (according to Magnuson) with the help of President Roosevelt, another young Congressman, Lyndon B. Johnson was put on the Naval Affairs Committee too. Magnuson recalled that he and Johnson were "the two young members" of the Committee at that time. 71/

Magnuson's oral history interviews--on file at the Johnson Library in Austin, Texas--make clear at length, and in colorful detail, the long, close friendship of Magnuson and Johnson. In fact, President Johnson was best man when Senator Magnuson was married in 1964. Their friendship bears on the history of pipeline safety legislation; Magnuson became Chairman of the Senate Committee on Commerce, which would ultimately consider pipeline safety, and Johnson became the President who adopted the issue as his own. That Johnson took Magnuson's advice on consumer legislation from time to time was suggested by Magnuson in an interview.

> Lyndon was very helpful to me on many of my consumer bills in Commerce that I passed. I see you have down here one Flammable Fabrics Act. That was the first consumer bill passed . . . . Way ahead of its time, and Lyndon helped me with that . . . . He didn't quite understand what I

69/ Johnson, Lyndon B. Consumer Interests--Message from the President of the United States. Congressional Record, Feb. 5, 1964, p. 1958. Emphasis added.

70/ Pertschuk, Michael. Telephone interview, Nov. 2, 1984.

71/ Warren G. Magnuson. Oral history transcript, Interview I, at Senator Magnuson's office in the U.S. Capitol, Mar. 14, 1978. p. 1-2. Johnson Library, Austin, Texas.

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> was trying to do but he said, "all right, if you think it's all right, why . . . ." And then that went on. 72/

We shall see below that Magnuson's interest in pipeline safety was noted in a White House file on that subject kept by President Johnson's chief domestic policy advisor. How it got there is speculative, but Senator Magnuson's oral history is suggestive:

> Then when he [Johnson] was President, of course, I used to see a great deal of him socially, quite a bit. I used to go down there once in a while. We'd talk about nothing but just sort of relieve him for a while. 73/

Senator Magnuson's idea of "nothing" could sometimes include lobbying for his bills, however. Evidently, his friendship and informal approach could be quite effective. President Kennedy once, on a public occasion, indicated his assessment of what Senator Magnuson could sometimes mean by [talking about] "nothing."

> Most members of the Senate [President Kennedy said] have developed the art of speaking with precision and clarity and force. The secret of Senator Magnuson's meteoric career has been the reverse. He may make clear speeches to you on great public occasions, but in Washington he speaks in the Senate so quietly that few can hear him. He looks down at his desk--he comes into the Senate late in the afternoon--he is very hesitant about interrupting other Members of the Senate--when he rises to speak, most Members of the Senate have left--he sends his messages up to the Senate and everyone says, "What is it?" and Senator Magnuson says, "It's nothing important." And Grand Coulee Dam is built. 74/

72/ Ibid., p. 14. The Flammable Fabrics Act is P.L. 83-88 (1953). This Act was passed as H.R. 5069, a bill similar to the 82nd-Congress bill S. 2918. For legislative history see U.S. Code Congressional and Administrative News, 1953. v. 2. p. 1722ff.

73/ Magnuson, op. cit., p. 10. Emphasis added.

74/ Address by President Kennedy at a 1961 dinner honoring Senator Magnuson's 25th year in Congress. Quoted in: The Senate's "Maggie": In a Casual Way, Washington's Magnuson Gets Much Done. The Wall Street Journal. Apr. 2, 1965. p. 8. Emphasis added.

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PIPELINE SAFETY BECOMES AN ISSUE IN EMINENT DOMAIN PROCEEDINGS

A Pipeline for the Nation's Commerce

In the early 1960s the Nation's economy was growing. The Inter-State Highway System, begun in the 1950s by President Eisenhower's Administration, was under construction. Automobile travel was more attractive than ever. The automobile industry was selling millions of high-powered, fuel hungry vehicles. Aircraft manufacturers had adapted for civilian airlines the large jet transports they originally developed for the armed services. Interstate air travel was becoming increasingly popular, spurred by rising personal income and the comfort, speed, and improved economy of the new airliners. The railroads were phasing out the last coal-burning steam engines in favor of the newer, diesel-fueled internal combustion locomotives.

These transportation industries required increasing quantities of fuel in the form of refined petroleum products, and the petroleum industry had moved boldly to ensure the ability to supply these liquid fuels. In 1961, nine major oil companies organized the Colonial Pipeline Company to build a petroleum products pipeline from Houston, Texas, to Linden, New Jersey. 75/

The Colonial Pipeline was planned as and became the world's largest and longest for carrying petroleum products: gasoline, light fuel oil and kerosene. Over most of its length through Pennsylvania it would be 30 inches in diameter. It was designed to carry 22,000 gallons per minute, and it would operate at a normal pressure of 672 pounds per square inch, or more. It was expected to cost more than any other privately financed construction job up to that time--more than $170 million. 76/

The Colonial Pipeline Reaches Pennsylvania

By 1963 the construction of this petroleum products pipeline was passing through Maryland and approaching Pennsylvania. The plan was to take it across the Southeast corner of Pennsylvania, and through Chester County. In Chester County, Pennsylvania, lived a number of engineers who were familiar with construction techniques

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75/ Price, Frederic C. Long-Distance Pipelines: Shouldn't They Be Safer? Chemical Engineering, Nov. 22, 1965. p. 134. The nine oil companies were American Oil, Cities Service, Continental Oil, Gulf Oil, Phillips Petroleum, Pure Oil, Sinclair Pipe Line, Socony Mobil Oil, and Texaco.

76/ Ibid.

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and stress calculations. 77/ Some of these were employed by the DuPont chemical company, which was based in nearby Delaware. 78/ As the line was being surveyed through Chester County, and eminent domain proceedings advanced along the route, the activity reached the properties of some of these chemical industry engineers.

A group of engineers, aroused by concern over their property interests, traveled to nearby Maryland to see for themselves the construction techniques employed in the advancing pipeline. They soon concluded that, according to the piping standards they were familiar with in the chemical industry, the pipeline was unsafe. Specifically, they believed that the pipe's wall was not thick enough, the pipe was not being buried deeply enough, the type of steel used in fabricating the pipe ("5LX52") was known to fail by brittle fracture, and that too few of the welds joining the pipe sections together were being properly inspected by radiographic (x-ray) methods. 79/

The Landowners Fight Back

The engineer-landowners formed a group which they called the Southeast Pennsylvania Landowners Association and chose a registered professional engineer, Frederic A. Lang of Landenberg, Pennsylvania, as their spokesman. 80/ The Landowners Association and the Pipeline Company waged a considerable battle in Chester County Court, with some victories on both sides, but ultimately the pipeline went through. Throughout, Colonial claimed that its line was built to the highest pipeline-industry standards, meeting the requirements of the American Petroleum Institute, the American Standards Association, and the American Society of Mechanical Engineers. The Landowners said that these standards were not adequate, and that Colonial was exploiting the weakness of the standards. 81/

During the controversy, Frederick Lang became convinced that the pipeline company, through its parent oil companies, sought to pressure the complaining engineers through their employer, DuPont. He believed that DuPont, a customer of the oil companies, had complied.

77/ Ibid.

78/ Lang, Frederick A. Telephone interview, July 1984.

79/ Lang, op. cit. Price, op. cit., p. 134. Also, Chemical Engineering, Jan. 6, 1964. p. 28.

80/ Price, op. cit., p. 134.

81/ Price, op. cit., p. 135.

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In addition, Lang believed with conviction that the pipeline interests had instigated a private investigation of him, personally. 82/ Though this contention was never proven in any court of law, rumored reports of the contention attracted the interest of a consumer advocate, through the following events.

In his professional activities, Frederick Lang had been Chairman of the Process Industries Division of the American Society of Mechanical Engineers (ASME). (This was the same Society which developed the pipeline code, but a different committee.) Following Lang as chairman of this engineering society committee was David Gordon Wilson, a professor of mechanical engineering. At about this time, Wilson had joined the engineering faculty at the Massachusetts Institute of Technology.

AUTOMOBILE SAFETY AND PIPELINE SAFETY CROSS PATHS

At about this time (1965-66) the Senate Commerce Committee was working on an automobile safety bill. Public attention had been focused on automobile safety in part by a book written by--and the lobbying of--a young lawyer: Ralph Nader. 83/ Nader's subsequent surveillance by a major automobile manufacturer would soon provoke a news uproar.

One day, as the auto safety matter still was pending in Congress, Mr. Nader visited a Senate office building. On this occasion, a private investigator followed him into the building, but was stopped and asked his business by Capitol Police in their function as building security personnel. Perhaps in a hurry, anxious not to lose sight of his subject, the investigator identified himself as such to the Capitol Police. The officers, perhaps sensitive to the interests of their congressional employers, thought to ask just who the investigator was investigating. That event soon came to help Mr. Nader's cause.

Eventually, it was learned that the investigator had been hired by the General Motors Company, and that he was, indeed, investigating Mr. Nader's activities and personal habits. Mr. Nader ultimately settled an invasion of privacy lawsuit with General Motors for $425,000, and became a better-known, better-financed consumer activist. In the course of these events, the Chairman of General Motors was summoned

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82/ Lang, op. cit.

83/ The Nader book was: Unsafe at Any Speed. New York, Grossman. 1965. 317 p. The story regarding Mr. Nader which follows here was developed from several sources, including telephone interviews with Frederic Lang and David Gordon Wilson. The story was confirmed by Mr. Nader in a telephone interview Jan. 4, 1985. See also: The New Republic, Mar. 12, 1966, p. 11-14, and Mar. 19, 1966, p. 8-9.

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to testify in Senate hearings, where he publicly apologized to Mr. Nader.

Apparently about this same time, the General Motors Corporation decided to make a charitable contribution to the cause of automobile safety. The Massachusetts Institute of Technology was the recipient of a gift of one million dollars, to be administered by M.I.T, to further the cause of automobile safety.

One of the things M.I.T. chose to do with the General Motors money was to sponsor a conference, "Project Transport," which was held in Gaithersburg, Maryland. David Gordon Wilson, new to the engineering faculty, was invited to join the group attending the conference. Also invited to participate in these meetings was Ralph Nader. During one of the breaks at this conference, Wilson approached Nader informally and the conversation turned to Nader's recent experience with the General Motors investigation. At one point Wilson compared Nader's experience to that of his professional colleague, Frederick Lang, with the pipeline and (putatively) oil companies. "Nader's nostrils flared like a racehorse's," recalled Wilson. 84/

It wasn't long before Nader had taken up the subject of pipeline safety. 85/ According to Michael Pertschuk, Senator Magnuson's General Counsel on the Commerce Committee, Nader came to Pertschuk as the auto safety bill was winding down and raised the issue of pipeline safety. 86/

Mr. Nader's new interest in pipeline safety--first attracted by concerns over the Colonial Pipeline for petroleum products--soon merged with interests the Senate Commerce Committee had begun to have in interstate gas pipeline safety. A Newsweek article showed the joint interest of Nader and the Committee.

> Attorney Ralph Nader, who already has the auto industry's pelt dangling from his belt, last week took aim at a new safety target: pipelines . . . .
>
> Just how safe [their] record is will be examined when the Senate Commerce Committee opens hearings soon on a bill proposed by its powerful Chairman, Washington Senator Warren Magnuson, setting Federal safety and inspection standards for pipelines. The legislation is strongly backed by the Federal Power Commission, which last April issued a report

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84/ Wilson, David Gordon. Telephone interview, July 12, 1984.

85/ And Now, Pipelines. Newsweek, July 11, 1966. p. 74.

86/ Pertschuk, Mike. Telephone interview, Nov. 2, 1984.

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blaming gas-line leaks and explosions for 64 deaths and 222 injuries over the past fifteen years. 87/

The General Motors investigation of Nader came to public light in March 1966; Newsweek reported the Nader interest in pipeline safety in July 1966. These dates bracket the period in which Nader became interested in pipeline safety. Nevertheless, Nader generally supported the recollection of General Counsel Michael Pertschuk; Nader said that the Committee "did not really get going" on pipeline safety until after Nader had brought his interest in this issue to Pertschuk. 88/ The report mentioned by Newsweek had been requested by the Commerce Committee a year earlier, after the March 4, 1965, explosion and fire at Natchitoches, Louisiana, in which 17 died. The report was requested by letter from Senator Magnuson to FPC Chairman Joseph C. Swidler, dated July 8, 1965. It was forwarded March 25, 1966, by the new Commission Chairman, Lee C. White (a former White House aide) and published by the Senate Commerce Committee in April 1966. 89/

THE FEDERAL POWER COMMISSION REPORT TO THE SENATE COMMERCE COMMITTEE (1966)

The Federal Power Commission report covered natural gas pipeline failures (in interstate transmission) between January 1, 1951, and June 30, 1965. This was approximately the period from the introduction of Congressman Heselton's first safety regulation bill up to the time the report was requested by Senator Magnuson. The report's summary of casualties for those years is given in Table II-1.

The interstate gas pipeline companies, responding to the request of the Commission, had supplied information on a total of 1,058 "pipeline failures." A tabulation of the causes of these failures indicated that the largest group, 279 failures, resulted from puncture by blow, bulldozer, or other earth moving equipment. The next most frequent causes were "corrosion" (193 failures), and "weld failures"

87/ And Now, Pipelines. Newsweek. July 11, 1966. p. 74.

88/ Nader, Ralph. Telephone interview, Jan. 4, 1985.

89/ U.S. Congress. Senate. Safety of Interstate Natural Gas Pipelines, A Report Prepared for the Use of the Committee on Commerce . . . at the Request of Honorable Warren G. Magnuson, Chairman, by the Federal Power Commission. 89th Cong., 2nd Sess. Washington, U.S. Govt. Print. Off., 1966. 134 p.

90/ Safety of Interstate Natural Gas Pipelines, p. 12.

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TABLE II-1. Pipeline Accident Casualties By Type Of Failure
(Jan. 1, 1950 to June 30, 1965*)

Year	Casualties from line failure during operation				Casualties from operating failures of other facilities				Casualties during line test				Total casualties			
	Employee		Nonemployee		Employee		Nonemployee		Employee		Nonemployee		Employee		Nonemployee	
	Death	Injury	Death	Injury	Death	Injury	Death	Injury	Death	Injury	Death	Injury	Death	Injury	Death	Injury
[illegible]	4	2		2		3				2			4	7		3
[illegible]		2	2	6	1	5							1	4	2	6
[illegible]				2		9								9		2
[illegible]				3		3								3		3
[illegible]	3	7		2									3	7		3
[illegible]	8	2	1			13							8	15	1	
[illegible]	3	8							1	1		1	4	9		1
[illegible]					4	11						1	4	16		4
[illegible]	1	7	1	3	2	10	2						3	17	3	2
[illegible]				1	2	4							2	4		1
[illegible]			2	15		3								3	2	15
[illegible]				34	1	7							1	7		34
[illegible]				2	1	2							1	2		2
[illegible]	2	2	2	2	2	10							4	20	2	8
[illegible]	2	6	1	2	2	2		1					4	11	1	4
[illegible]		1	17	3				3						1	17	9
Total	19	39	27	81	15	98	2	4	1	3		2	35	138	29	87

* 1965 incomplete.

Source: Safety of Interstate Natural Gas Pipelines. A Report Prepared for the Use of the Committee on Commerce, United States Senate, by the Federal Power Commission. (89th Cong., 2nd Sess.) Washington, U.S. Govt. Print. Off., Apr. 19, 1966. p. 19.

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TABLE II-2. Summary of Pipeline Failures by Cause of Failure*
(Jan. 1, 1950 to June 30, 1965)

Cause of Failure	No. of failures	Subtotal
Pipeline punctured by plow, bulldozer, excavating shovel, road grader, or other earth moving equipment		279
Corrosion		193
External	148	
Internal	45	
Weld failures		190
Defective field weld	84	
Longitudinal (factory) weld	84	
Weld failure (type unreported)	22	
Action of the elements: flood, hurricane, landslide, lightning, river current and washouts		84
Coupling failures		65
Wrinkle bends or pipe damaged during handling or installation, but damage not discovered until after failure		58
Fatigue failures		35
Defective pipe (hard spots, laminations, and brittleness)		26
Thermal stress (caused by extreme temperature changes)		21
External explosion (such as nearby dynamite blast)		14
Miscellaneous		38
Unknown or unreported		55
Total		1,058

*Operational line failures only. Excludes 121 compressor station, metering station, and other facilities failures, and 1,115 field testing failures.

Source: Safety of Interstate Natural Gas Pipelines. A Report Prepared for the Use of the Committee on Commerce, United States Senate, by the Federal Power Commission. (89th Cong., 2nd Sess.) Washington, U.S. Govt. Print. Off., Apr. 19, 1966. p. 12.

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A Department of Commerce report found in White House files cited the FPC tabulation of pipeline failures and stated that

> . . . the early morning pipeline failure and resultant fire near Natchitoches, Louisiana, on March 4, 1965, caused the incineration of 17 sleeping victims. The heat was so intense that steel and glass portions of automobiles were literally melted. This disaster obtained wide publicity and is the immediate cause of the current considerable concern over the safety of pipelines. 91/

THE FPC'S GROWING ROLE IN ELECTRIC POWER RELIABILITY AND PIPELINE SAFETY

About this time (1965-1966), it appears that the FPC's concept of its responsibilities was changing under the influence of an activist President and a new FPC Chairman, Lee C. White (who was appointed by President Johnson from White's previous position on the White House staff). In connection with another issue--electric power reliability--White tells a story which characterizes the relationship of FPC programs to the character of the President.

> When that big [New York] blackout hit . . . on November 9, 1965 . . . President Johnson was out somewhere on [his Texas] ranch . . . [and] he heard on the radio that there was some difficulty up in New York . . . . The President got on the [automobile] radio and called up [his chief domestic policy advisor Joseph] Califano . . . and he said, "For . . . sake, get the FPC on it." The FPC, bless their hearts, it never occurred to them that reliability was one of their bags. You know, it's economic rate regulation and a lot of other things. And it never would have occurred to them. The . . . Chairman, Joe Swidler, was at a reception . . . when Califano finally ran him down . . . .
>
> "The President said there's a [expletive] blackout in New York. You'd better be doing something

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91/ U.S. Dept. of Commerce. National Bureau of Standards. Report on Gas Pipeline Failures. (Submitted to Dr. Herbert Hollomon, Assistant Secretary of Commerce for Science and Technology. Prepared by Melvin R. Meyerson, Acting Chief, Metallurgy Division, Institute for Materials Research, NBS.) Oct. 27, 1966. p. 15. This report was found in the White House Aides Files, Office Files of Joseph Califano, folder titled "Pipeline Safety," Lyndon B. Johnson Library, Austin, Texas.

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> about it." . . . The first thing [Swidler] knew he was back at the FPC with all the members of the Commission and the chief engineer and everybody else. And from that time on the Federal Power Commission has been deeply involved in the reliability of electric service in this country. 92/

Thus we see a willingness of President Johnson to involve the Federal Power Commission in a regulatory activity reaching beyond economic issues to the issue of electric power system reliability. We will further see, below, the issue of electric power reliability paired with the issue of natural gas pipeline safety, in recommendations by the FPC Chairman for the President's legislative program.

TRANSPORTATION POLICY IN FERMENT

By late 1966, Executive Branch and FPC officials were busily concerned with transportation policy in general, and pipeline safety in particular. In August, FPC Chairman Lee White testified before the Senate Commerce Committee in support of S. 1553, "legislation authorizing a comprehensive Federal safety code which would set mandatory, minimum safety standards for interstate natural gas pipelines."

On August 30, and September 29, the House and Senate passed bills which would create a new Department of Transportation, and on October 15, 1966, President Johnson signed the bill creating the new Department of Transportation (P. L. 89-670). 93/

On October 10, 1966, a Task Force was established, headed by Budget Director Charles L. Schultz, "to develop a program to insure pipeline safety." The Task Force consisted of officials from the Bureau of the Budget, the Department of Commerce, the Federal Power Commission, and the White House Office of Science and Technology. 94/

92/ White, Lee C. Oral History Transcript, Interview IV. Mar. 29, 1979. p. 11-13. U.S. National Archives. Lyndon B. Johnson Library, Austin, Texas.

93/ Schott, Richard L., and Dagmar S. Hamilton. People, Positions, and Power--The Political Appointments of Lyndon Johnson. Chicago, U. of Chicago Press, 1983. p. 86. Also: U. S. Code Congressional and Administrative News, 1966:3 p. 3362.

94/ Memorandum, Jim Gaither to Joe Califano, Apr. 4, 1967. White House Aides Files, Office Files of Joseph Califano, folder on "Pipeline Safety," Lyndon B. Johnson Library, Austin, Texas.

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The Bureau of the Budget, by letter of October 17 to Senator Magnuson, concurred with FPC Chairman Lee White's testimony in favor of S. 1553, but indicated that the Executive Branch would give further consideration to possible refinements in the bill "with a view toward submitting recommendations to the 90th Congress." 95/

On November 6, the President announced his selection of Alan S. Boyd, then Undersecretary of Commerce for Transportation, as Secretary of the newly created Department of Transportation. (Following Senate confirmation, Boyd was sworn in Jan. 16, 1967.) 96/

The task force, led by Budget Director Schultz, reported to the President's chief domestic policy advisor (Joseph A. Califano, Jr.) on November 30, 1966. The task force concluded that the Administration should propose legislation to regulate natural gas pipelines; that the legislation should provide minimum Federal safety standards; that the new Department of Transportation, not the FPC, should be assigned responsibility for the new pipeline safety functions; and that the legislation should take the form of an amendment to the "Explosives Act" and apply that Act's criminal penalties to the field of pipeline safety. The task force recommended that Alan Boyd, who was still Undersecretary of Commerce for Transportation, be requested to prepare draft legislation, "which can then be put into the usual legislative clearance channels." 97/

On December 5, 1966, White House aide Larry Levinson reported to Special Assistant Joseph Califano on a pipeline safety meeting Levinson had conducted as a follow up to the task force report. The following officials were present: Secretary of Commerce John T. Connor, Secretary-of-Transportation-designate Alan Boyd, FPC Chairman Lee White, Office of Science and Technology Director Don Hornig, Budget Deputy Director Sam Hughes, Department of Interior Undersecretary Charles F. Luce, and Assistant Secretary of Commerce for Science and Technology Herbert Hollomon. 98/

Levinson first reported that the safety record had been "good, to date . . . [a]bout 64 deaths in the last 15 years." However, he said, "[a]s the population shifts to areas over which gas pipelines are [already] installed--as the pipes age--we could have disasters

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95/ Memorandum of Phillip S. [Sam] Hughes, Deputy Director, Bureau of the Budget to Joseph Califano, Nov. 30, 1966. White House Aides Files, Files of Joseph Califano, folder on "Pipeline Safety," Lyndon B. Johnson Library, Austin, Texas.

96/ People, Positions and Power. p. 87.

97/ Hughes memo. Op. cit.

98/ Memo from Levinson to Califano. White House Aides Files, Dec. 5, 1966. Also see: People, Positions, and Power (Index).

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that might incinerate entire communities." Levinson also reported that the consensus of the meeting was that "there should be a natural gas pipeline safety measure presented next year." He said the legislation should authorize Federal, minimum safety standards covering the interstate gas network--some 150,000 miles of pipeline. 99/

The reasons for Federal standards were that "about half the States have no standards at all . . . the half that have standards don't enforce them and the standards are controlled by industry." The reason for minimum standards was that "we don't know enough about the long-term effects of metal corrosion and fatigue to set absolute standards." Levinson offered Califano no discussion of why the recommendation was for interstate pipelines only.

Levinson told Califano: "The legislative situation is ripe. Magnuson held hearings last year. He is anxious to continue." Levinson said that the two major undecided issues were (a) whether to "grandfather" the $12 billion worth of pipe already in the ground and (b) which agency should be assigned the responsibility. "Everyone [at the meeting] agrees that [the Department of Transportation] should get it. [DOT] already has oil pipeline safety so it's logical to combine this. FPC would like to have DOT take it because it will let FPC concentrate on economic regulation, leaving safety to DOT. [Alan] Boyd is willing to take it on." But, Levinson added, there could be more industry opposition to "a tough, safety-minded DOT [than to the FPC]," jeopardizing passage of the bill. At the meeting, Levinson asked White to talk informally with several people he could trust in the industry, and take a sounding of opinion--then, to see if (all of) the FPC Commissioners would endorse the authority going to Transportation.

"When this is done--mid next week--we can issue an order to Boyd to start drafting the legislation or keep FPC going on the bill it supported last year." Levinson noted that the meeting reached no consensus on whether the bill should be a "one-line" amendment to the Natural Gas Act, or an amendment of the Explosives Act, "with sanctions, enforcement, etc." 100/

The President's Domestic Policy Advisor Considers The Issue

In addition to the official correspondence coming into Joseph Califano's White House office at this time, there may have been in-person advocacy by one or more persons. In Califano's White House file on pipeline safety, now housed at the Johnson Library in Austin, there is an unsigned and undated page of handwritten

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99/ Ibid.

100/ Ibid.

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notes. Perhaps these were notes on a briefing given to him or to one of his aides. The notes refer to "more than a decade in trying to get legislation." Then there is a reference to "Maggie," certainly a reference to Senator Magnuson who was known to many by this nickname. 101/

We have already referred to Magnuson's friendship with President Johnson, and to his social visits to the White House to see his powerful friend. Though Magnuson said he talked about "nothing" on these visits--a powerful Senate Chairman, friend of the President, could probably on occasion have gained a few minutes conversation with the President's immediate and nearby aides.

Under the name "Maggie," in the Califano file notes, are the words: "in last 15 years 64 dead: 35 employees[,] 224 injured." Then follow the words:

Nader Speech

-- pipeli[ne] co. put profit ahead of safety;
-- industry stnds not [illegible], not observed; and
-- public doesn't have voice in setting stands. 102/

The last note is a little different in nature from most of the discussion in the White House files, and elsewhere, of pipeline safety: ". . . public doesn't have voice in setting [standards]." It is neither a statement about technology, nor about commercial institutions; it is a statement about political institutions.

We do not know which "Nader speech" Mr. Califano, or one of his aides, may have had in mind in making this note. Mr. Nader, in an interview January 4, 1985, told us that he gave a speech to a "D. C. chapter of civil engineers," sometime in 1966--June, he thought.

According to Mr. Nader, this speech had received press coverage, and had come to the attention of the President's Bureau of the Budget--through Mr. Gary Burns Sellers, who was employed by the

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101/ The Senate's "Maggie": In a Casual Way, Washington's Magnuson Gets Much Done (by Dan Cordtz). The Wall Street Journal, Apr. 2, 1965. Reprinted in The Congressional Record. Senate, Apr. 8, 1965. p. 7513-14.
". . . he exudes an air of good fellowship that prompts total strangers to call him by his nickname."

102/ Handwritten notes, White House Aides Files, Files of Joseph Califano, folder on "Pipeline Safety," Lyndon B. Johnson Library, Austin, Texas.

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Bureau at that time. 103/ Mr. Sellers told CRS that his responsibility at the BOB was in the area of mining safety, and that he was not officially involved in the pipeline safety matter. 104/ These sources have not yet told all they know, but it appears likely that Mr. Sellers actually contributed to the Nader speech itself (or speeches themselves), and may have had some informal and unofficial role in carrying Mr. Nader's views to the Bureau of the Budget and/or the White House West Wing.

It is possible that the speech in question was (or was similar to) one that Mr. Nader actually gave December 3, 1966--at Howard University in the District of Columbia. It was given to the Winter Meeting of the Middle Atlantic Section of the American Society for Engineering Education. 105/ The date of the speech is just two days before that of Larry Levinson's summary memo to Joseph Califano, and is just about the time that Joseph Califano would have been summing up the views of the President's staff, in preparation for the State of the Union message in January.

We are not sure just why the Nader point, about the public voice in setting standards, was considered notable in the Califano file. But this point has a ring of familiarity arising from previous Presidential pronouncements. President Johnson, in his Consumer Interests message of 1964, had referred to President Kennedy's Consumer message of 1962, in which Kennedy had articulated four rights of the consumer, including "the right to safety," and "the right to be heard." 106/ Even if consumers were not speaking on the subject of pipeline safety--and, generally, they were not--this Administration was preparing to listen.

103/ Nader interview, Jan. 4, 1985.

104/ Telephone interview, Aug. 8, 1985.

105/ "The Engineer's Professional Role: Universities, Corporations, and Professional Societies;" subtitled "The Engineering Crisis in a Changing Society." This December speech was reprinted as part of congressional testimony Mr. Nader gave in 1967: U. S. Congress. Senate. Committee on Commerce. Natural Gas Pipeline Safety Regulations. Hearings, 90th Cong., 1st Sess., on S. 1166., Apr. 19, 20; Aug. 1, 2 and 3, 1967. p. 201-207.

106/ U.S. Executive Office of the President. Compilation of Presidential Documents. The messages on consumer interests mentioned here were on Mar. 15, 1962, and Feb. 5, 1964.

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THE PRESIDENT'S TIMELY PROPOSAL

The State Of The Union Address

On the evening of January 10, 1967, the members of the United States Senate and House of Representatives, the Supreme Court, the President's Cabinet (and, in the gallery, the press and special guests) assembled in the House chamber for re-enactment of an annual ritual: the President's State of the Union Address. President Lyndon B. Johnson mounted the podium and began:

> Mr. Speaker, Mr. Vice President, distinguished Members of the Congress:
>
> I have come here tonight to report to you that this is a time of testing for our Nation. 107/

In the gallery, the President's family sat with family of the presidential assistants who had labored preparing the speech. On national television, millions of Americans watched. 108/

The President continued:

> At home, the question is whether we will continue working for better opportunities for all Americans, when most Americans are already living better than any people in our history.
>
> Abroad, the question is whether we have the staying power to fight a very costly war, when the objective is limited and the danger to us is seemingly remote.
>
> So our test is not whether we shrink from our country's cause when the dangers to us are obvious and close at hand, but, rather, whether we carry on when they seem obscure and distant . . . .

It was a long speech, lasting an hour and fifteen minutes, and what the President said about pipeline safety was short. Toward the end of the address, he proposed three more legislative objectives in a single sentence.

> We should immediately take steps to prevent massive power failures, to safeguard the

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107/ U.S. Executive Office of the President. Compilation of Presidential Documents. The Address was given Jan. 10, 1967.

108/ New York Times, Jan. 11, 1967. p. 17.

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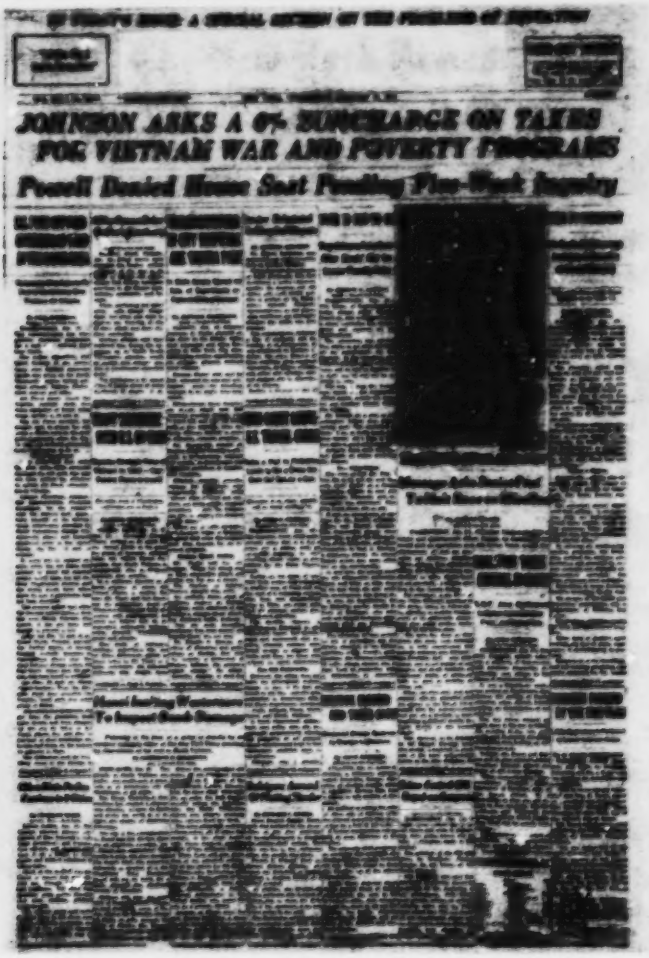
FIGURE II-5. The New York Times Covers the President's State of the Union Message of January 10, 1967



JOHNSON ASKS A 6% SURCHARGE ON TAXES FOR VIETNAM WAR AND POVERTY PROGRAMS

Powell Denied House Seat Pending Fine-Black Inquiry

Note: The President's endorsement of Federal legislation on pipeline safety regulation took a back page to taxes, a foreign war, and the "war on poverty."

Source: The New York Times, Jan. 11, 1967. p. 1. Copyright © 1967 by the New York Times Company. Reprinted by permission.

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> home against hazardous household products, and to assure safety in the pipelines that carry natural gas across our Nation . . . .
>
> And I will propose these measures to the 90th Congress. 109/

A newsmagazine commented:

> Many of his proposals seemed surprisingly modest and oddly esoteric for the occasion. He recommended new help for American Indians and migrant workers, . . ., tougher safety precautions for natural gas pipelines, development of educational television . . . .
>
> When the President wound up his 75-minute speech he was rewarded with polite applause--even though many in his audience had sat through the last half hour in a glazed slouch or, in a few cases, deep slumber. 110/

At first, few took any specia' note of the "modest and . . . esoteric" proposal of the President for pipeline safety. Later, President Johnson's Special Assistant for Consumer Affairs remarked:

> " . . . believe me when you say "natural gas pipeline safety," yo.'ve got the classic example of one [issue] that the public doesn't really get hold of unless there has been an explosion in their neighborhood." 111/

The New York City Explosion and Fire (January 13, 1967)

Barely more than two days after the State of the Union speech, at 5:10 a.m. Friday, there was trouble at the Brooklyn Union Gas Company headquarters on Montague Street. On the 10th floor, Cliff Hoffman, Assistant System Supervisor on duty, was receiving an indication of difficulty: the pressure gauges at his massive control console began showing a rapid drop in pressure on medium pressure gas piping in the Jamaica area of the borough of Queens. Gas pressure at the Jamaica station dropped from 11 1/2 pounds to 3 1/2

109/ Johnson, op. cit., p. 30. Emphasis added.

110/ Time, Jan. 20, 1967. p. 13. Emphasis added.

111/ Mrs. Leslie Midgley (Betty Furness). Oral history interview at the Executive Office Building, Dec. 10, 1968. p. 24-25. Lyndon B. Johnson Library, Austin, Texas.

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pounds per square inch. Immediately, Hoffman reached for his control panel and started two compressors to increase the flow of gas into the main, attempting to restore normal pressure. 112/

A little later, Mrs. Francis Keating was getting Stephen, Mary Ann and Kevin ready for school when the 7:30 news came on the kitchen radio. According to the Times:

> She didn't really hear any of the words until the radio announcer said "The heroes of the huge gas fire were Patrolman Francis Keating and . . . ."
>
> "That's Daddy"! 10-year old Stephen screamed, clapping his hands. "That's Daddy!" 113/

The Chairman of the Federal Power Commission recalled it like this:

> If you remember the circumstances, it was just absolutely fortuitous. A couple of cops happened to be cruising by and saw a manhole explode or something, and just really it was almost miraculous. They sensed instantly what had happened and not only had they sensed it, but they did something about it.
>
> They went around and they roused people. Otherwise there would have been a dozen people killed, at least. 114/

Lee White's account appears partially in error. The New York Times reported that a resident, Mrs. Rose Padimha, awakened by something, had reached from her bed to dial the Operator, who in turn relayed the report to police. 115/ Although wire-service and

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112/ U.S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Communications and Power. Report on Investigation of Natural Gas Fire Which Occurred On Jan. 13, 1967, at 101st Avenue and Brisbin Street, Jamaica, Queens, N.Y.C. National Gas Pipeline Safety. Hearings, 90th Cong., 1st and 2nd Sess., on H.R. 6551, S. 1166. Dec. 6, 1967, Feb. 27, 28, 29, and Mar. 1, 1968. p. 93-97.

113/ New York Times, Jan. 14, 1967. p. 14.

114/ White, Lee C. Oral History Transcript. Interview III, Mar. 2, 1971. p. 32. Lyndon B. Johnson Library, Austin Texas.

115/ New York Times, Jan. 14, 1967. p. 14.

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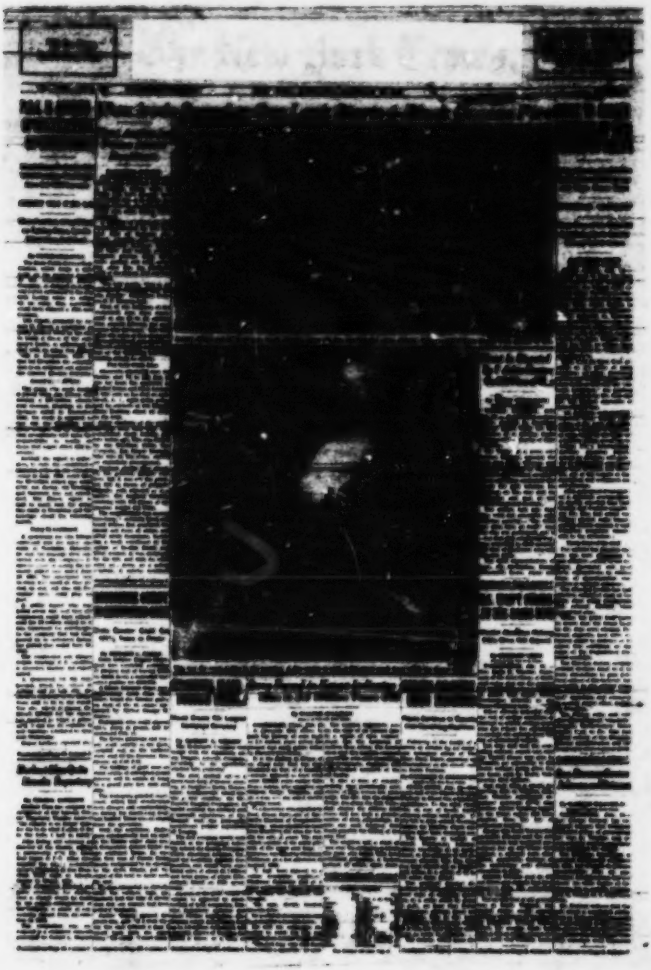
FIGURE II-6. The New York Times Covers the Gas Pipeline Explosion and Fire in the Borough of Queens, Three Days After the President's State of the Union Message in Which He Endorsed Pipeline Safety Legislation



Source: The New York Times, Jan. 14, 1967. p. 1. Copyright © 1967 by the New York Times Company. Reprinted by permission.

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newspaper accounts referred to the gas as coming from a manhole, 116/ in fact it gushed forth from a 26-inch circular opening in an underground "drip pot" attached to a 24-inch medium-pressure gas main. When the seal on that opening gave way, a 5,000 pound force of escaping gas lifted the 285-pound circular plug and blew away an estimated 10 3/4 inches of earth cover. 117/

A reporter interviewed a resident and a patrolman:

> "First I smelled gas. And then I heard this terrible noise, like a whine that didn't stop," said Renato Guglielmi. "I rushed to the window. Right across the street I saw the gas [sic], directly in front of my house. The next thing I knew Police were yelling 'everybody out.'"
>
> "We told people, 'this is an emergency--everybody out!,'" reported Patrolman Keating. 118/

Nine minutes after Cliff Hoffman first noticed the pressure drop on his gauges, the fire department received an alarm transmitted by Patrolman John O'Connor from a neighborhood alarm box. 119/ Two of the first five fire trucks on the scene stalled in the street near the escaping gas

> "because," firemen said, "the gas was so heavy in the area that their engines could not get enough oxygen."
>
> "The Hell with the engines, lets get the people," said Fire Lieutenant Thomas Egan, in command of the pumper truck. 120/
>
> The second fire alarm was at 5:31 a.m. and the third at 5:36 a.m.
>
> Between the two was the explosion.

116/ The Washington Post, Jan. 14, 1967. p. 3.

117/ Report on Investigation, p. 95.

118/ The New York Times, Jan. 14, 1967. p. 14.

119/ Report on Investigation of Natural Gas Fire. p. 94. Also, New York Times, Jan. 14, 1967. p. 14.

120/ New York Times, Jan. 14, 1967. p. 14.

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"Like an inferno, there was nothing but fire and noise around," Patrolman O'Connor said, "a tremendous noise that just shot out of the ground." 121/

"The explosion was a deafening roar--a whoosh like a jet exhaust," said Patrolman Keating. "I about died, I was so scared." 122/

Three two-family brick and wooden structures [at the corner], evacuated only minutes before, were instantly reduced to burned wreckage. Only two stone chimneys jutting in the air indicated that the stuctures had ever existed.

Sergeant William Finan said: "I knew there were dead cops in there." Fortunately, he was wrong. 123/

Less than twenty-six minutes had elapsed from the first indication of leaking gas.

The two stalled fire trucks near the open gas main were quickly destroyed in the flames. Again and again supplementary alarms were transmitted by fire officials until, by daylight, a total of 70 fire units and approximately 400 firefighters had responded from as far away as Manhattan, to contain the flames or to take up positions vacated by fire companies responding from stations closer to the fire. According to the utility commissioner's report, there were 14 buildings damaged in varying degrees. 124/ Reports of the damage varied, but the Washington Post summed up: ". . . the City's worst fire in a generation. . . ." 125/

121/ Ibid.

122/ Ibid.

123/ Ibid.

124/ Report on Investigation, p. 94-95.

125/ The Washington Post, Jan. 14, 1967. p. 3.

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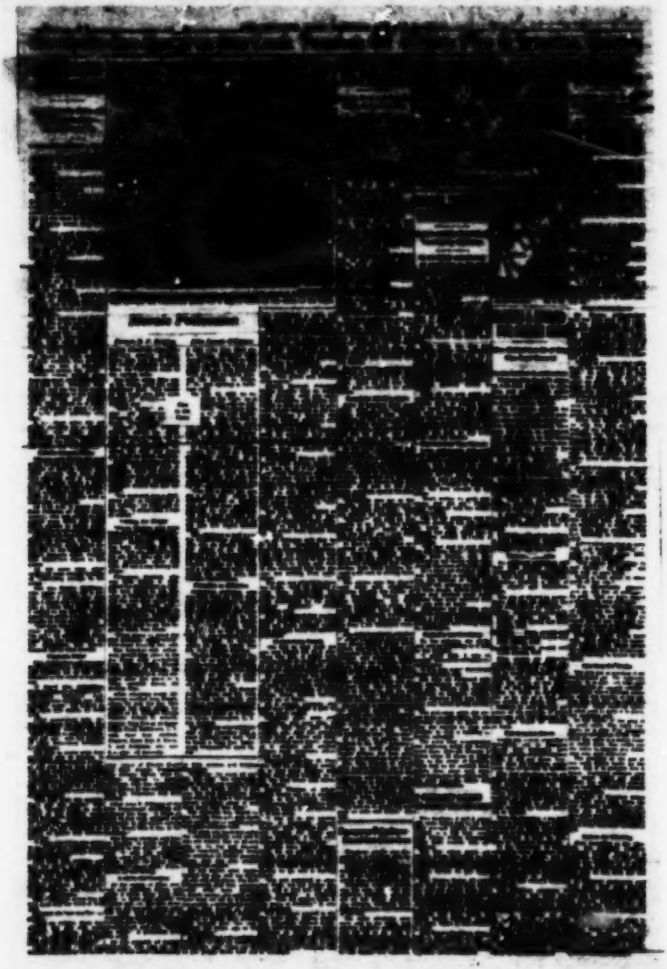
FIGURE II-7. The New York Times Covers the Gas Pipeline Explosion and Fire—Page 14



Source: The New York times, Jan. 14, 1967. p. 14. Copyright © The New York Times Company. Reprinted by permission.

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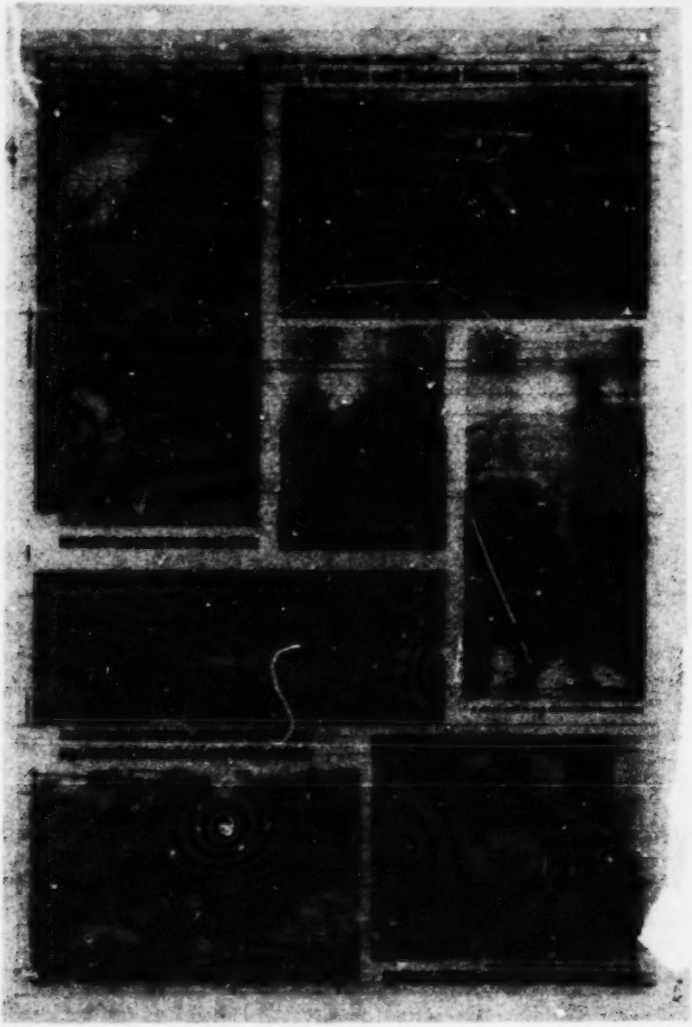
FIGURE II-8. The New York Times Covers the Gas Pipeline Explosion and Fire—Page 15



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That night, on national television, the Queens explosion and fire were the lead stories on the evening news programs of both the CBS and NBC television networks. 126/

Thanks to prompt and heroic action by police and fire personnel and extreme good luck, no civilian injuries were reported. Two policemen and one fireman were treated and released. 127/ Later, a newspaper writer referred to the events as "the miracle of Friday the thirteenth." 128/

After the New York Fire

Monday, at 10 a.m., Commissioner James Marcus, at the direction of Mayor John Lindsay, began interrogations at his office of Gas Company officials and others involved in Friday's events. 129/

In the first few days after the fire, neither the New York Times nor the Washington Post followed up the story with additional stories, or editorials. Of course, there were many stories competing for the attention of the press. For example, the Times published that, in the week ending Saturday, January 14, "more American Servicemen were killed or wounded in action . . . than in any week since the Vietnam war began." 130/

The Times, in a Sunday editorial two days after the fire, described the week's events in Washington as follows:

> The 90th Congress was off to a bad and shaky start last week, with the stodgy response of the Republicans to the uninspired State of The Union message and the confused, inept performance of

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126/ Broadcast outline: "Cronkite News, Friday, Jan. 13, 1967" (photocopy). Received Nov., 1984, from Laura B. Kopnick, Director of the CBS News Reference Library (New York).

Broadcast transcript: "The Huntley Brinkley Report, January 13, 1967" (photocopy). Transmitted by letter to CRS from Sally McGraw, NBC Public Information Director, Audience Services (New York). Nov. 16, 1984.

127/ New York Times, Jan. 14, 1967. p. 14.

128/ Ibid.

129/ Ibid. Also see: Report of Investigation, cited above.

130/ New York Times, Jan. 20, 1967. p. 1.

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the Democrats. By weekend, nobody had any grounds for satisfaction. 131/

In Washington, someone thought he had such grounds. Federal Power Commission Chairman Lee White later expansively recalled his feelings about the week's events to an interviewer from the National Archives. The interviewer asked how the President, in his State of the Union Address, had come to ask for pipeline safety legislation: "Did he [the President] ask you to help him with this?"

> No, the other way around. Joe Califano sent out memos all around the government saying, "What have you got, especially in the consumer field?" I came up with both pipeline safety and the electric reliability and stuck it in there, and it worked out just fine. . . . 132/

> . . . the industry that was most concerned was the interstate pipeline [industry]. And where the problems rested in large measure were in the local distribution companies . . . it was clear to us that there had to be some type of improved Federal or State regulations. And in telling the people in the White House . . . [Joseph] Califano and Larry Levinson who worked with him--I said, "This is a legitimate problem. But more importantly, you just know damned well there are going to be some explosions, and you fellows will look an awful lot better if the President has asked for something, you can always blame the [expletive] Congress. . . . They accused me of having gone out and blown up that thing in Long Island just to make my own prediction look good. It did come much faster than I would have expected, but it fit exactly what I remember telling those guys. 133/

White continued:

> I don't know whether President Johnson fully got this, but I think one time he did sort of twit me as though I had put that up, but he knew I didn't and probably figured I was a [expletive] genius for having picked that thing out and saved him from having to scurry around. 134/

131/ New York Times, Jan. 15, 1967. p. E-16.

132/ White, op. cit., p. 31.

133/ Ibid., p. 35-36.

134/ Ibid., p. 36.

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There is support for White's claim in a White House memorandum by Jim Gaither. Gaither reported that:

> White feels very strongly that the President should come out in support of pipeline safety in the near future without any precise commitment in terms of a specific proposal. He is convinced that another explosion will occur before any legislation is enacted and that it is very important for the President to be on record in favor of pipeline safety. 135/

White's expansive recollections to the interviewer might suggest that the New York gas explosion galvanized political Washington to concern for pipeline safety. In fact, one may search in vain the Congressional Record, for the week following the fire, to find any evidence of that. Evidently, the 90th Congress, in only its second week after convening, was occupied with other matters--for there were no insertions in the Congressional Record of stories of the fire, no speeches taking note of the fire were made from the floor, and no hearings were immediately scheduled. 136/

Alan S. Boyd was sworn in as the first Secretary of Transportation on Monday, January 16, 1967--three days after the dramatic events in New York. The Washington Post story on the swearing said nothing about specific transportation issues. President Johnson's quoted remarks were limited to Mr. Boyd's high qualifications for the office. 137/

The Media Attention Continues

Apparently, the early reaction of the national and Washington news media was to treat the New York explosion and fire as a dramatic local event, of only transitory national news interest. However, because this local event occurred in New York City--a national media center--the story interest did not entirely die in publications of national distribution.

135/ Memorandum of James C. Gaither to Joseph A. Califano, Jr. Aug. 24, 1966. Subject: "Highlights of [a] meeting with Lee White." White House aides files, office files of James Gaither, folder title: "pipeline safety." Lyndon B. Johnson Library, Austin, Texas. Emphasis in the original.

136/ Congressional Record, Jan. 16-20, 1967.

137/ Boyd Sworn as Head of Transport Dept. The Washington Post, Jan. 17, 1967. p. 2.

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The first published connection of the Queens fire with the national pipeline safety issue raised in the State of the Union Address may have been in a New York Times Sunday business-section article by Gene Smith. 138/ Mr. Smith interviewed Ralph Nader by telephone, and quoted Nader as saying:

> The Queens fire--if I may use the word--merely illuminated the issue . . . . Unfortunately, most areas of our country need a disaster to show what problems exist. President Johnson referred specifically to pipeline safety in his State-of-the-Union message on January 10.

The Smith article continues:

> Mr. Nader said he felt that the pipeline safety issue was contained in the message "because Lee White [is] committed to it and he has the President's ear . . . ." Mr. Nader also said: "I have already learned how prophetic President Johnson was from the letters and telephone calls I have received since his message and since the explosion . . . just two days before the Queens explosion [there was an explosion in] Meeker, Oklahoma. Two workers were killed, one house was totally destroyed along with five trucks, a tractor and . . . yet the incident went almost unnoticed except in local Oklahoma newspapers."

The Federal Power Commission's official historian drew additional conclusions:

> There were several lessons for Congress in the Queens fire. It had occurred on the distribution system of one of the larger gas distribution companies [and not on an interstate transmission line]. It had occurred in one of the very few states which had on its books a strong gas safety code--stronger in many respects than the voluntary industry code. After the gas safety efforts of the FPC in Congress over the previous two years and another major gas failure, the stage was set for a final all-out drive to enact a Federal gas pipeline safety program. 139/

138/ Smith, Gene. Nader Stresses Pipeline Safety. New York Times, Jan. 22, 1967. sec. 3, p. 1.

139/ Inglis, op. cit., p. 10-11.

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The President's Proposal Made Specific

President Johnson elaborated the commitment of his State of the Union Message, one month later, in his message to Congress on Consumer Protection (February 16, 1967). He asked for enactment of his proposal, the "Natural Gas Pipeline Safety Act of 1967." The location of the proposed new power was finally settled in this proposal; the new Department of Transportation, created in late 1966, would have the authority instead of the Federal Power Commission. Further, Johnson proposed that the authority would cover all segments of the gas industry: gathering, transmission, and distribution pipelines, both interstate and intrastate. 140/

In his Consumer Protection Message President Johnson took note of two well-publicized pipeline accidents of the previous 23 months. These were the the failure near Natchitoches, Louisiana, which killed 17 people in March, 1965--and the explosion and fire on January 13, 1967, in Queens, New York. The proposed legislation was introduced in the Senate as S. 1166, and the Senate Commerce Committee commenced hearings April 19, 1967. 141/ These hearings led directly to the "Natural Gas Pipeline Safety Act of 1968," as detailed in the following chapter.

140/ Ibid., p. 11.

141/ Ibid., p. 12-13.

III. PIPELINE SAFETY LEGISLATION AND REGULATION (1967-1985)*

INTRODUCTION

The Federal Government has been significantly involved in the economic regulation of rates and charges for interstate transportation by oil pipelines since the enactment of the Hepburn Act in 1906.1/ Similarly, the Federal Government undertook significant regulation of the rates and charges for interstate natural gas pipelines and, later, the rates charged by producers of natural gas sold in interstate commerce under the Natural Gas Act in 1938.2/

However, the economic regulation of these pipelines was not accompanied by a Federal assertion over safety regulation of the pipelines. Although criminal offenses were established with regard to the transportation in interstate commerce of certain explosives in 1909 3/, it was not until the enactment of the Transportation of Explosives Act in 1921 4/ that Congress authorized the Interstate Commerce Commission to formulate regulations for the safe transportation by common carriers in interstate commerce of "dangerous articles, including inflammable liquids, inflammable solids, oxidizing materials, corrosive liquids, compressed gases, and poisonous substances..." Violation of the regulations could result in criminal penalties of up to $10,000 or ten years imprisonment.

It should be observed that the 1921 Act applied to interstate oil pipelines because they were common carriers under the Hepburn Act, but not to interstate natural gas pipelines because they were not deemed common carriers. However, the Natural Gas Act provided that the Federal Power Commission could impose certain conditions in connection

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1/ 34 Stat. 584 (1906), 49 U.S. Code Appendix Section 1 et seq.(1982).

2/ Public Law 75-688, 52 Stat. 821 (1938), 15 U.S. Code Section 717 et seq. (1982). See also, the Natural Gas Policy Act of 1978, Public Law 95-621, 15 U.S. Code Section 3201 et seq. (1982), which provided for statutory wellhead price regulation of natural gas.

3/ See, 35 Stat. 1134 (1909).

4/ Public Law 400, 41 Stat. 1444 (1921).

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with the granting of a certificate of convenience and necessity for the construction of natural gas pipelines. Presumably these conditions could have included safety requirements concerning such matters as location and constructions specifications for pipelines. It is not clear how extensive the FPC certificate requirements for new construction were during this period, although it appears that the Commission did begin to impose safety conditions after the enactment of the Natural Gas Pipeline Safety Act of 1968.

For virtually a half century, the Transportation of Explosives Act of 1921 provided the only authority for Federal regulation of interstate pipeline safety. During this period the States were apparently free to conduct safety regulation of both intrastate and interstate pipelines, although apparently few States imposed extensive pipeline safety regulation.

Despite the efforts of Congressman Heselton in the early 1950's and various recommendations for more extensive Federal regulation of pipeline safety, legislation was not given significant consideration until the initiatives that resulted in the Natural Gas Pipeline Safety Act of 1968.

It is the purpose of this Chapter to provide a brief synopsis of the evolution and development of pipeline safety legislation beginning with the formulation of the Natural Gas Pipeline Safety Act of 1968. The legislative and administrative events associated with that legislation provide an appropriate background for consideration of the many policy issues currently confronting the Congress with regard to pipeline safety.

THE NATURAL GAS PIPELINE SAFETY ACT

On February 16, 1967, President Lyndon B. Johnson said in his consumer message to the Nation that with the creation of the Department of Transportation one agency had safety responsibilities over all modes of transportation except the movement of natural gas by pipeline. He proposed the "Natural Gas Pipeline Safety Act of 1967," to give the Department of Transportation the responsibility for natural gas pipelines, too.

The Senate Committee on Commerce conducted five days of hearings on the bill, S. 1166, introduced by its Chairman, Senator Warren Magnuson, in April and August, 1967.5/ Following the hearings, the Senate Commerce Committee voted unanimously to report the Committee

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5/ U. S. Congress. Senate. Committee on Commerce. Natural Gas Pipeline Safety Regulations. Hearings, 90th Congress, 1st session, on S. 1166, a bill to authorize the Secretary of Transportation to prescribe safety regulations for the transportation of natural gas by pipeline. ... Apr. 19, 20; Aug. 1, 2, and 3, 1967. Washington, U. S. Govt. Print. Off., 1967.

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bill. The Committee report 6/ recounted a brief history of pipeline safety legislation, contained a written evaluation of the recently amended standard code for pressure piping that was prepared by Secretary of Transportation Alan S. Boyd, contained a letter of support for the legislation from Lee C. White, Chairman of the Federal Power Commission, and explained the background and need for the legislation.

Several points were mentioned to explain the need for the legislation. The creation of the Department of Transportation 7/ had given that agency centralized regulatory responsibilities over safety in virtually all modes of transportation (air, water, and land) except over the movement of natural gas, other flammable gases and nonflammable hazardous gas by pipeline. Since natural gas pipelines accounted for approximately 150,000 of the 224,000 miles of transmission pipe in the country, and since the natural gas companies had reported to the Federal Power Commission that 64 deaths and 225 serious injuries had occurred from January 1950 to August 1965 from operational failures of interstate transmission pipelines, the Committee was concerned about the lack of uniform safety standards within the industry. The rupture and explosion at Natchitoches, Louisiana, in March of 1965, was cited as an example of the serious dangers from gas lines. In addition, the Committee expressed concern for the currrent condition of pipe originally laid 30 to 40 years earlier. These concerns served as the stated basis for the Committee's support for the bill.

The Committee-reported bill conferred safety regulatory power on the Secretary of Transportation for natural gas transmission and distribution lines affecting interstate commerce, but excluded from such regulation other flammable gas, and nonflammable hazardous gas.

The bill directed the Secretary of Transportation to promulgate minimum Federal safety standards, within 24 months of enactment, that were to extend to all aspects of new pipeline facilities: design, installation, inspection, testing, construction, extension, operation, replacement, and maintenance. With respect to design, installation, construction, and initial testing of existing facilities the Committee version provided that the new Federal standards would not apply unless the Secretary of Transportation found that a potentially hazardous situation existed.

In order to quickly provide for national pipeline safety standards, the bill directed the Secretary to promulgate "interim standards" for safety within three months by adopting as Federal standards the standards which existed in the States. Where States had no

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6/ Senate Report 733, 90th Congress, 1st Session (1967).

7/ Department of Transportation Act, Public Law 89-670, 80 Stat. 931 (1966).

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standards, the Federal standard was to be that which was common to a majority of States with standards.

The procedures for the adoption of the standards were specified as those contained in the Administrative Procedures Act, and authority was given to the Secretary to waive compliance with the Federal standards by local lines where a State had adopted and enforced State standards of comparable scope and stringency.

The Senate bill proposed the establishment of a Technical Pipeline Safety Standards Committee to report to the Secretary on technical aspects of safety regulation. The Secretary was authorized to require the maintenance of records, to conduct inspections, to conduct research, development and testing, and to assess civil penalties for violations of regulations. In addition, the Secretary was authorized to seek judicial injunctions to prevent violations that might cause imminent personal injury and property damage. The bill also authorized the Secretary to make grants to State agencies to pay up to 50 per cent of the cost of a state safety program.

Finally, the Committee bill exempted gathering lines from regulation, but directed the Secretary to report to Congress within a year on the need for Federal safety standards for gathering lines. The bill as reported by the Committee was passed by the Senate.

House Action on the Natural Gas Pipeline Safety Act

In the House of Representatives, the Subcommittee on Communications and Power held hearings during 1967 and 1968 on natural gas pipeline safety.8/ Both Secretary of Transportation Alan Boyd and Federal Power Commission Chairman Lee White testified in support of the legislation. The extensive testimony at the hearings described the natural gas pipeline networks and recounted several pipeline accidents. Two accidents were mentioned. The first occurred in Hastings, New York, on January 13, 1968. The second, a crack in a gas main in Logansport, Indiana, caused an explosion that injured eight people. In May, 1968, the House Committee on Interstate and Foreign Commerce, having taken up the consideration of the Senate-passed bill, reported S. 1166 with several of its own changes.9/

8/ U. S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Communications and Power. Natural Gas Pipeline Safety. Hearings, 90th Congress, 1st and 2d sessions, on H.R. 6551, S. 1166, bills to prescribe safety standards for the transportation of natural gas by pipeline. . . . Dec. 6, 1967; Feb. 27, 28, 29, and Mar. 1, 1968. Washington, U. S. Govt. Print. Off., 1968.

9/ House Report No. 1390, 90th Congress, 2d Session (1968).

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Conference Committee Action

The Conference Committee that was convened to resolve the differences between the Senate version and the House version of S. 1166 reported in July, 1968.10/ Although many of the provisions of the House and Senate versions were similar, one significant difference concerned the relationship of the Federal standards to State jurisdiction. Both the House and the Senate versions provided for State enforcement instead of Federal enforcement of safety standards applicable to gathering, distribution, and local transmission lines. The Senate approach required the execution of an agreement between the Secretary and a State, the prerequisite to which was the availability of civil penalty and injunctive authority under State law similar to those powers under Federal law. The House bill required a certification process confirming that the law of the State actually provided for civil penalty and injunctive authority. The Conference substitute combined the two by requiring as a condition precedent to State certification that the law of the State provide for civil penalties and injunctive relief, with a provision that this requirement allow for certification without regard to State law for two years.

Differences between the two versions with regard to the rejection or termination of a State certification were resolved by accepting the House procedure for an annual certification. Rejection or termination would be initiated in a show-cause proceeding in which the State would have the burden of showing before the Secretary that it was in compliance with Federal standards.

The House and the Senate bill differed greatly in authorization levels. The Senate bill authorized $10,000,000 for Fiscal Year 1969, $13,000,000 for Fiscal Year 1970, and $15,000,000 for Fiscal Year 1971. The House bill authorized only $500,000 for Fiscal Year 1969, $2,000,000 for Fiscal Year 1970, and $3,000,000 for Fiscal Year 1971. The conferees basically agreed to the lower House levels, except that the authorizations for Fiscal Year 1971 were increased from $3,000,000 to $4,000,000. The lower funding levels set the stage for the program's future funding problems. The Senate bill had authorized the Secretary to require pipeline companies to pay a fee to help defray the expenses of Federal inspection and enforcement. The House bill, and ultimately the conference bill, did not contain this provision. The lack of express statutory authority to charge fees became a continuing issue of some importance in connection with later legislation.

Rather minor differences in the amounts of the civil penalties were resolved by compromise. Finally, the conference report provided for the repeal of the Transportation of Explosives Act of 1921.

10/ House Report No. 1795, 90th Congress, 2d Session (1968).

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In accord with the Conference Report, both the House and the Senate passed the bill, and President Johnson signed into law the Natural Gas Pipeline Safety Act of 1968 (NGPSA) on August 12, 1968.11/

A summary and assessment of the legislation, made shortly after its passage by an industry attorney, indicated industry opposition to, and claimed a lack of need for, the legislation:

> The proponents of S. 1166 had to acknowledge that the gas industry is safety-minded and enjoys a fine record. Their case was built on speculation, on the what-might-happen, not on actuality or on experience. The truth is that the gas industry was a kind of victim, a scapegoat for the politically-motivated "consumerism" which became a preoccupation of the last Administration.
>
> Part of the responsibility for this legislation does, nevertheless, rest on the shoulders of the industry itself. Over the decades, the gas industry had spent countless millions of dollars on safety-related research projects and construction procedures. A substantial portion of its annual budget is devoted to operations connected with safety. It has always been mindful of its responsibilities to the public and keyed the reliability of its service to the safety of its service. But, the gas industry failed badly in one regard. In this period when the "public image" is so emphasized, it neglected to project [sic] its own. It did not tell its story of the millions of dollars and the thousands of man-hours spent every year on safety. As a result, it must now contend with another stratum of unneeded and costly regulation. Hopefully, the industry will not be so modest about blowing its own horn in the future.
>
> During the course of the Congressional hearings, S. 1166 was not infrequently referred to as the vehicle of a Federal-State partnership. If such a relationship has been achieved, there can be little doubt that the Federal partner has emerged the senior. The powers granted the Secretary of Transportation under the Act cut deeply into an area of authority traditionally reserved to the States, the regulation of intrastate commerce. Without debating the rights and wrongs of this latest elasticizing of the Commerce Clause of the United States Constitution, it is nonetheless noteworthy that the restraint on Federal authority provided by the Hinshaw Amendment in the Natural Gas Act is next to absent here. In fact, the Secretary is the overseer of the State agencies, having the power, after a hearing, to assume regulation of purely local facilities if dissatisfied by a State agency's performance.
>
> Undeniably, Federal preemption of regulatory authority over interstate transmission pipelines will simplify operating practices for those lines. However, it would seem

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11/ Public Law 90-481, 82 Stat. 720 (1968).

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that it will be only a matter of time before a State agency will challenge that preemption and test the right to assert its constitutional police power over the interstate facilities. The Natural Gas Pipeline Safety Act of 1968 may well serve as the vehicle for some interesting litigation in the future.12/

As we shall see, the prophecy of this observation, regarding potential litigation over the preemptive nature of the new Federal law over State law, proved accurate.

Establishment of DOT's Natural Gas Pipeline Safety Program

On September 10, 1968, about a month after the Natural Gas Pipeline Safety Act became law, the Secretary of Transportation created an Office of Pipeline Safety (OPS) in the Office of the Assistant Secretary for Research and Technology.13/ Congress appropriated $250,000 until the end of fiscal year 1969, which provided for a staff of twenty. William C. Jennings was appointed Acting Director, and personnel were detailed from elsewhere in the Department of Transportation (DOT), and from the Federal Power Commission (FPC), to work on pipeline safety at DOT.14/

At first, DOT had little expertise in pipeline safety. They spent much of their first month collecting information on pipeline failures in order to identify problem areas. The Office of the Assistant Secretary focused on developing regulations because it did not have the resources to both develop and enforce regulations.15/

On November 13, 1968, the Office of Pipeline Safety published its first regulations--the interim minimum safety standards required by the Natural Gas Pipeline Safety Act.16/ For the States that already had standards, the interim standards were the existing State codes. For the States that did not have State codes (Nebraska, South Dakota, and Puerto Rico) their standards were the B31.8 code that formed the basis for the standards in most of the rest of the States. And since

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12/ The Natural Gas Pipeline Safety Act of 1968, by Martin F. Armstrong, Jr., 2 Natural Resources Lawyer 142 (1969).

13/ United States Department of Transportation. Annual Report of the Secretary of Transportation on the Administration of the Natural Gas Pipeline Safety Act of 1968. Washington. Department of Transportation. 1969, p. 1.

14/ DOT, Annual Report on the Administration of the NGPSA, 1969, p. 1.

15/ U. S. DOT, Annual Report on the Administration of the NGPSA, p. 4.

16/ 33 Fed. Reg. 16500 (Nov. 13, 1968).

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DOT judged that Congress did not want gaps in coverage, the B31.8 code was also made the standard for parts of pipelines that some States had exempted from regulation. In this rulemaking, DOT authorized the States to serve as its enforcement agents for both intrastate and interstate pipelines because, at the time, DOT did not have the capability to enforce the regulations. DOT expected to withdraw this authority for interstate standards as soon as it developed this capability for itself.17/

Congress conducted two oversight hearings on the Act in 1969. The House Interstate and Foreign Commerce Committee conducted oversight hearings in which they reviewed the status of State regulation and the Department of Transportation regulations.18/ And the Senate Commerce Committee conducted a brief hearing which principally reviewed the Department of Transportation interim regulations called for under the Act.19/ The hearings showed that the Office of Pipeline Safety was laying the groundwork for its regulatory program but was not yet developing or enforcing regulations.

Hazardous Liquid Pipeline Safety Regulations

At the same time as the Congress was considering the Natural Gas Pipeline Safety Act, the Interstate Commerce Commission (ICC) was developing regulations for the safety of interstate hazardous liquid pipelines. The ICC had its previous authority to regulate liquid pipeline safety restored to it in 1965 in an amendment to the Transportation of Explosives Act.20/ Shortly thereafter, the ICC began

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17/ Ibid.

18/ U. S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Communications and Power. Pipeline Safety--1969. Hearing, 91st Congress, 1st session, on the matter of safety of gas and liquid pipelines. Mar. 5, 1969. Washington, U. S. Govt. Print. Off., 1969.

19/ U. S. Congress. Senate. Committee on Commerce. Subcommittee on Surface Transportation. Gas Pipeline Safety Oversight. Hearing, 91st Congress, 1st session, on Department of Transportation Progress in Implementing The Natural Gas Safety Act of 1968. July 9, 1969. Washington, U. S. Govt. Print. Off., 1969.

20/ See, Public Law 89-95, 79 Stat. 285 (1965). Public Law 86-710, 74 Stat. 808 (196) had modified the Transportation of Explosives Act to apply to carriers, other than pipelines. The effect of the 1960 law was presented by witnesses from the Bureau of Motor Carriers of the Interstate Commerce Commission at a Senate hearing in 1965. See, U. S. Congress. Senate. Committee on Commerce. Safety Regulation by ICC of Interstate Pipelines. Hearing, 89th Congress, 1st session, on S. 1021, to amend Title 18, Chapter 39, of the United States Code, entitled "Explosives and Combustibles." June 3, 1965. Washington, U. S. Govt. Print. Off., 1965.

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preparing regulations on hazardous liquid pipeline safety. By 1967, the Commission issued a notice of proposed rulemaking for the first part of these regulations, which explained the scope, purpose, and applicability of the regulations and included a subpart on accident reporting.21/

Before the proposed rules were adopted, the Department of Transportation Act was enacted. The DOT Act transferred the Interstate Commerce Commission jurisdiction over the transportation of explosives and other dangerous articles to the Federal Railroad Administration inside the newly-created Department of Transportation.22/ However, before the Department of Transportation became operational in April, 1967, and while the ICC still had jurisdiction, the first part of the new ICC oil pipeline regulations finally took effect on December 31, 1967.23/ In 1968, the Federal Railroad Administration published a notice of proposed rulemaking for a second part of the oil pipeline safety regulations. The final regulations were published on October 4, 1969, and were based on the USASI B31.4 code, the liquid counterpart to the industry's gas safety code.24/ Many of the requirements were written in general language, and simply mandated good engineering practice.25/

Development of the Office of Pipeline Safety--1969-1971

Over the next several years, the Office of Pipeline Safety continued to develop its pipeline safety program. It developed regulations, began to certify state pipeline safety programs, and began to encourage compliance with the regulations. Throughout 1969, the Office continued to develop regulations, even though it did not have a surveillance force that was able to determine the degree of

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21/ 32 Fed. Reg. 1098 (Jan. 31, 1967).

22/ Section 6(f)(3)(A) of the Department of Transportation Act, Public Law 89-670, 80 Stat. 931 (1966), provided that the "Federal Railroad Administration [in the Department of Transportation] shall carry out the functions, powers, and duties of the Secretary [of Transportation] pertaining to railroad and pipeline safety as set forth in the statutes transferred to the Secretary by subsection (e) of this section." Section 6(e)(5)(B) of the Department of Transportation Act transferred funtions to the Secretary under the Transportation of Explosives Act of 1921.

23/ 32 Fed. Reg. 16040 (Nov. 22, 1967).

24/ 34 Fed. Reg. 15473 (Oct. 4, 1969).

25/ For example, 49 C.F.R. 195.102, "Design Temperature", reads as follows: "Materials for components of the system must be chosen for the temperature environment in which the components will be used so that the pipeline will maintain its structural integrity."

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compliance with the regulations.26/ The Office continued to collect information on pipeline accidents to help it identify where regulations were needed, and the Technical Pipeline Safety Standards Committee met six times to provide advice on regulations.27/

DOT published its new permanent Federal Safety Standards for gas pipelines on August 19, 1970.28/ These regulations were based on the interim standards, issued in November, 1968, but incorporated many modifications. The new standards were extensive and detailed, and included requirements for:

Materials to be used in steel, iron, plastic, and copper pipe;

The thickness of the pipe to be used to meet a specified pressure, and other criteria for designing pipe;

Valves, flanges, fittings, tapping, welding, supports, and anchors;

Compressor stations;

The design of underground vaults for valves and pressure regulators;

Pressure control and relieving;

Welding;

Construction of transmission lines and mains;

Testing of pipeline;

Uprating of lines;

Operating pressures;

Emergency plans;

Odorization of gas;

26/ Department of Transportation. Second Annual Report of the Secretary of Transportation on the Administration of the Natural Gas Pipeline Safety Act of 1968, Calendar Year 1969. Washington. Department of Transportation. 1970. p. 5.

27/ Ibid.

28/ 35 Fed. Reg. 13257 (Aug. 19, 1970).

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Maintenance of pipelines, compressors, valves, and vaults;

Other miscellaneous requirements.

The regulations did not include provisions for corrosion control because comments on the proposed corrosion regulations were still being evaluated. The requirements for operation, maintenance, and inspection of existing pipelines became effective on November 12, 1970, and the requirements for design, installation and testing of new pipelines became effective on March 12, 1971.29/

In 1970, OPS also began to develop its compliance activities. However, by the end of 1970, it still had only a "...very limited field surveillance force . . .," and had conducted no enforcement actions.30/ All of the States except Hawaii, Louisiana, and Puerto Rico were voluntarily participating in the pipeline safety program, and several States took actions against operators to promote compliance with the Federal standards.31/

In 1971, the Office of Pipeline Safety published their regulations for controlling corrosion. Some studies had indicated that corrosion caused 50% of all pipeline leaks.32/ With the gas pipeline safety standards complete, the emphasis of the program changed from developing regulations to making the program operational. OPS increased its efforts to inform States and pipeline companies about the program and also began to take actions to evaluate and improve compliance. It began to review the performance of State agencies by reviewing their certifications and by visiting the offices of the State programs. OPS also evaluated the safety activities of several interstate transmission operators.33/ OPS kept track of, and presented to Congress, the growing number of actions conducted by State agencies to enforce the minimum safety standards within their States.34/

29/ Department of Transportation. Third Annual Report of the Secretary of Transportation on the Administration of the Natural Gas Pipeline Safety Act of 1968, Calendar Year 1970. Washington. Department of Transportation. 1971. p. 6.

30/ DOT, Third Annual Report on the Administration of the NGPSA, 1971, pp. 8-9.

31/ Ibid., pp. 8-16.

32/ 36 Fed. Reg. 12297 (June 30, 1971).

33/ Department of Transportation. Fourth Annual Report of the Secretary of Transportation on the Administration of the Natural Gas Pipeline Safety Act of 1968, Calendar Year 1971. Washington, Department of Transportation. 1971.
p. 11.

34/ Ibid.,pp. 12-14.

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During the period of the initial regulatory activities of OPS, litigation began concerning the preemptive nature of the 1968 Act. Ironically, in the first suit under the Act, it was a pipeline that asserted that the Act was preemptive, in order to escape local pipeline safety regulation. In United Gas Pipeline Co. v. Terrebonne Parish Police Jury, 35/ the U.S. District Court for the Eastern District of Louisiana struck down conditions imposed in connection with the issuance of a building permit for a 4-inch natural gas transmission pipeline. The Terrebonne Parish Police Jury had adopted an ordinance which required, among other things, compliance with the B31.8 code and future police jury amendments of that code. The Court found that the ordinance related "to the construction, installation or operation of gas or liquid petroleum pipelines," and therefore was invalid because State authority had been preempted:

> Even, arguendo, that the requirements for constructing and installing said line under the ordinance are identical with that of the interim federal code as defendant maintains in their brief, the ordinance would still be invalid. Congress by completely pre-empting this area of interstate pipeline safety has specifically prohibited the states from doing anything in this regard....This being the case, the ordinance cannot be valid regardless of whether its regulatory standards with respect to design, construction, maintenance and operation of the pipeline are greater, lesser or identical with those found in either the Safety Act or the Natural Gas Act. The pipeline here involved, being an interstate one about which Congress has left nothing to the states with respect to regulation and control, all regulatory authority and control is with the federal government.36/

The decision of the District Court was affirmed on appeal to the Fifth Circuit Court of Appeals.37/

Although the preemptive nature of the Federal statute was initially established rather quickly after the enactment of the Act, this first judicial challenge regarding preemption was not to be the last. In another early case, the Federal statute was held not to shut off state causes of action, based upon nuisance, against pipelines.38/

35/ 319 F. Supp. 1138 (E.D. Louisiana 1970).

36/ Ibid., pp. 1141-42.

37/ United Gas Pipe Line Co. v. Terrebonne Parish Police Jury, 445 F.2d 301 (5th Cir. 1971).

38/ Baker v. Central & South West Corp., 334 F. Supp. 752 (N.D. Oklahoma 1971).

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Thus, common law remedies regarding pipeline matters were held not to be terminated by the 1968 Act.

1971 Oversight Hearings and 1972 Legislation

The House Committee on Interstate and Foreign Commerce conducted oversight hearings in 1971.39/ NARUC criticized the standards adopted by the Department of Transportation as being weaker than the standards which had been in effect in several States and pointed out the failure of the Federal Government to make available funding authorized to the States under the 1968 Act.

Although money had been appropriated to reimburse the States for up to 50% of their costs of regulating intrastate lines, as of March, 1971, no Federal funds had yet been provided to the States.40/ Testimony before Congress revealed that the Office of Management and Budget (OMB) prevented the Federal funds from being spent until OMB determined how the funds would fit into its larger revenue-sharing program.41/ As a consequence, OPS had not yet reimbursed money to the States as provided for under the NGPSA. Another objection was to DOT's requirement that State regulatory agencies, rather than State judiciaries, should have the power to levy monetary fines and to issue injunctions against pipeline companies. NARUC argued on behalf of some States that the capability of the States' judiciaries to impose monetary penalties should be acceptable, because some States reserved those powers to their judiciaries.42/

Another complaint made in the hearings was that the States, when acting as agents of the Federal Government in the conduct of inspec-

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39/ U. S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Communications and Power. Natural Gas Pipeline Safety Act Amendments. Hearing, 92d Congress, 1st session, on H.R. 5065. Mar. 9, 1971. Washington, U. S. Govt. Print. Off., 1971.

40/ U. S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Communications and Power. Natural Gas Pipeline Safety Act Amendments. Hearing, 92nd Congress, 1st session, on H.R. 5065. Mar. 9, 1971. Washington, U. S. Govt. Print. Off., 1971. p. 13. Statement of James B. Minor, Acting Deputy Assistant Secretary for Safety and Consumer Affairs, Department of Transportation.

41/ Ibid, p. 13.

42/ U. S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Communication and Power. Natural Gas Pipeline Safety Act Amendments. Hearings, 92d Congress, 1st session, on H.R. 5065. Mar. 9, 1971. Washington, U. S. Govt. Print. Off., 1971. pp. 28-29. Statement of George I. Bloom, President, National Association of Regulatory Utility Commissioners.

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tions, were not expressly allowed under the 1968 Act to assess against the pipeline companies the cost of making the inspection.43/

Thus, at that time, the States were thought not to be permitted to utilize a traditional method of State funding for inspections and had not yet received any Federal funds to assist them. Shortly after the 1971 hearings, DOT released the money that had been appropriated to the States, thereby satisfying one of the complaints.

In late 1971 the Senate Commerce Committee conducted hearings on the 1968 Act.44/ At those hearings the Department of Transportation reviewed the activities of its Office of Pipeline Safety in carrying out the requirements of the Act. DOT recommended extension of the two-year deadline for States to empower their agencies with civil and injunctive sanctions. DOT also recommended the amendment of the Act to permit transfer of the authority over liquid pipeline safety matters from the Federal Railroad Administration (located in DOT) to the Office of Pipeline Safety. The Department also supported an amendment that would allow grants-in-aid to be made up to 50% of the expenses incurred by the States that would act as agents of the Department to enforce compliance by interstate pipelines. This modification of the grant program expanded Federal assistance, from funding for state programs on intrastate pipelines, by providing additional funding for state enforcement of Federal standards on interstate pipelines.

The National Transportation Safety Board testified with regard to its investigation of pipeline accidents and made recommendations for alleviating safety problems. The National Association of Regulatory Utility Commissioners (NARUC) submitted a series of recommendations at the hearings including support for mandatory grants-in-aid.

Following its hearing, the Senate Commerce Committee reported a bill extending the State sanction deadline to five years, expanding the grants-in-aid provision to assist States in the cost of Federal enforcement, authorizing appropriations for the administration of the Act. The bill also required the Secretary of Transportation to submit a report to the President, for transmittal to the Congress, in March, 1973. The report would outline the safety program in each State, each State's sources of funds, and evaluate alternative Federal funding mechanisms.45/

43/ Ibid., p. 27.

44/ U. S. Congress. Senate. Committee on Commerce. Subcommittee on Surface Transportation. Natural Gas Pipeline Safety. Hearing, 92d Congress, 1st session, on S. 980, S. 1910, and H.R. 5065. Nov. 9, 1971. Washington, U. S. Govt. Print. Off., 1971.

45/ Senate Report No. 92-829, 92d Congress, 2d Session (1972).

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In June, 1972, the House Committee on Interstate and Foreign Commerce reported H.R. 5065, which provided for a two year extension of the State sanction requirement under the Act and authorized grants-in-aid up to 50% to reimburse States for the costs associated with Federal enforcement. In addition, the bill authorized appropriations to carry out the Act.46/

At conference, the Senate bill was adopted with some minor modifications,47/ and the 1972 Amendments to the 1968 Act were signed into law.48/

Following the enactment of the 1972 amendments, a court decision addressed the question of the extent to which the States could impose fees on interstate pipelines to help defray the cost of administering the State pipeline safety program activities. In Tenneco, Inc. v. Public Service Commission of West Virginia,49/ the U.S. District Court for the Southern District of West Virginia upheld a West Virginia statute authorizing the assessment of fees against interstate pipelines to help defray the costs of the pipeline safety program, because it expressly avoided conflict with the Natural Gas Pipeline Safety Act of 1968, by limiting the reach of State regulation "to the extent permitted by the 'Act of 1968' and any amendments thereto." The Court made this observation:

> A careful reading of the federal and state statutes and rules promulgated thereunder discloses a clear effort on the part of the Congress of the United States and the Legislature of West Virginia to develop a cooperative program in gas pipeline safety administration. Plaintiffs' contentions that the federal government under the United States Constitution has jurisdiction over interstate gas pipeline transportation facilities and that federal statutes, including the Act of 1968 here involved, preempt the field to the exclusion of the state legislation are valid as principles and propositions of law, but are not found to be applicable and controlling in this action...
>
> The federal Act of 1968 does not purport to preempt the field and the West Virginia statute carefully avoids conflict with the federal legislation.50/

46/ House Report No. 92-257, 92d Congress, 1st Session (1972).

47/ House Report No. 92-1322, 92d Congress, 2d Session (1972).

48/ Public Law 92-401, 86 Stat. 616 (1972).

49/ 352 F. Supp. 719 (S.D. West Virginia 1973).

50/ Ibid., at 721.

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The Fourth Circuit Court of Appeals agreed with the District Court and affirmed the decision on appeal:

> We find in the 1972 amendment and in its legislative history no unmistakable congressional intention to bar states from assessing pipelines to pay the remaining 50 per cent of the States' expenses. The fact that Congress chose not to enact legislation that would authorize state regulatory commissions to assess interstate pipelines under federal law does not establish that Congress intended to prohibit such assessments under state law. To the contrary, the legislative history of the 1972 amendment indicates that Congress was willing to allow the states to select the most feasible means of financing the balance of their costs in light of their own tax structures and budgetary requirements.51/

Thus, the concerns expressed to the Congress, with regard to the inability of the States to charge inspection fees, were resolved in this litigation.

The Office of Pipeline Safety Assumes Jurisdiction over Hazardous Liquids and LNG--1972

In November of 1972, the scope of the Office of Pipeline Safety was expanded in two ways. In one action, DOT transferred the regulation of hazardous liquid pipelines from the Federal Railroad Administration into the Office of Pipeline Safety.52/ As described before, authority for regulating hazardous liquid pipelines was provided under the Transportation of Explosives Act, and regulations had been developed first by the Interstate Commerce Commission and then by the Federal Railroad Administration in the Department of Transportation.

A second expansion was that OPS amended their pipeline safety regulations to include standards covering the handling of liquefied natural gas (hereinafter, "LNG"). 53/ These regulations required that LNG facilities constructed after January, 1973, be constructed and operated in accordance with the 1971 edition of the National Fire Protection Association's standard NFPA 59A, entitled "Storage and Handling of Liquefied Natural Gas." These

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51/ Tenneco, Inc. v. Public Service Commission of West Virginia, 489 F. 2d 334, 338 (4th Cir. 1973).

52/ U. S. Congress. House. Committee on Interstate and Foreign Commerce. Special Subcommittee on Investigations. Staten Island Explosion: Safety Issues Concerning LNG Storage Facilities. Hearings, 93rd Congress, 1st session, on legislative issues relating to the safety of storing liquefied natural gas. July 10, 11, and 12, 1973. Washington, U. S. Govt. Print. Off., 1973. p. 177. Statement of Joseph C. Caldwell, Director, Office of Pipeline Safety, DOT.

53/ 37 Fed. Reg. 21638 (Oct. 13, 1972).

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were intended to be interim regulations until DOT established permanent regulations.54/

Shortly after the LNG safety regulations were published, a dramatic accident illustrated the need for them. On February 10, 1973, the Texas Eastern LNG facility on Staten Island exploded, killing forty workers. The workers were repairing a tank that had been out of service for over a year, due to leakage.55/ Remnants of several unauthorized items, including cigarette lighters and cigarettes, were found inside the exploded tank. Residual petroleum gases or liquids, trapped in a polyurethane lining, probably provided the fuel for the explosion.

In 1973, the House Commerce Committee conducted extensive hearings on liquefied natural gas safety issues following this explosion.56/ The hearings examined the incident in some depth and reviewed the current status of LNG safety regulations under Federal law.

The 1974 Amendments to the Natural Gas Pipeline Safety Act

In 1974, DOT's pipeline safety program was five years old and became subject to more intensive congressional scrutiny. In 1974 the House Committee on Interstate and Foreign Commerce conducted a brief oversight hearing on the Natural Gas Pipeline Safety Act of 1968.57/ The hearing discussed the funding and staffing levels for the pipeline safety program and heard testimony concerning an explosion on a gas transmission line in Fauquier County, Virginia, in June 1974.

54/ Ibid., p. 21639.

55/ U. S. Congress. House. Committee on Interstate and Foreign Commerce. Special Subcommittee on Investigations. Staten Island Explosion: Safety Issues Concerning LNG Storage Facilities. Hearings, 93d Congress, 1st session, on legislative issues relating to the safety of storing liquefied natural gas. July 10, 11, and 12, 1973. Washington, U. S. Govt. Print. Off., 1973. p. 62. Statement of Hon. John N. Nassikas, Chairman, Federal Power Commission.

56/ U. S. Congress. House. Committee on Interstate and Foreign Commerce. Special Subcommittee on Investigations. Staten Island Explosion: Safety Issues Concerning LNG Storage Facilities. Hearings, 93d Congress, 1st session, on legislative issues relating to the safety of storing liquefied natural gas. July 10, 11, and 12, 1973. Washington, U. S. Govt. Print. Off., 1973.

57/ U. S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Communications and Power. Natural Gas Pipeline Safety Act of 1968 Amendments. Hearing, 93d Congress, 2d session, on H.R. 15205, a bill to amend the Natural Gas Pipeline Safety Act of 1968 to authorize additional appropriations. . . . June 13, 1974. Washington, U. S. Govt. Print. Off., 1974.

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Both DOT representatives and legislators agreed that the funding and staffing levels of the Office of Pipeline Safety were inadequate to meet their responsibilities. In 1974, OPS employed 25 people, with 22 in Washington and 3 in a Houston field office. The States also had about 90 people working full time in pipeline safety.58/ In Fiscal Year 1973, 39 States requested funding through grants-in-aid for their intrastate programs; 36 satisfied DOT's requirements and received money.59/ The total grants-in-aid funding for Fiscal Year 1973 was $818,537, an average of about $23,000 per State. Some States had decided not to apply for Federal grants-in-aid because they judged that there was too much paperwork involved for the amount of benefit.60/

Another issue in the hearing was whether DOT had considered charging pipeline companies for inspection services. DOT responded that, when Congress was debating the 1968 Act, it deliberately omitted user fees, and that court cases had undermined DOT's authority to assess user fees under the Independent Offices Appropriation Act of 1952.61/ Courts had ruled that Federal agencies could not charge user fees unless the party being levied the fee benefited from the service provided.62/

58/ U. S. Congress. House. Committee on Foreign and Interstate Commerce. Subcommittee on Communications and Power. Natural Gas Pipeline Safety Act of 1968 Amendments. Hearing, 93d Congress, 2d session, on H.R. 15205, a bill to amend the Natural Gas Pipeline Safety Act of 1968 to authorize additional appropriations. . . . June 13, 1974. Washington, U.S. Govt. Print. Off., 1974. p. 6. Testimony of Joseph C. Caldwell.

59/ Ibid., p. 7.

60/ Ibid., p. 7-8.

61/ U. S. Congress. House. Committee on Foreign and Interstate Commerce. Subcommittee on Communications and Power. Natural Gas Pipeline Safety Act of 1968 Amendments. Hearing, 93d Congress, 2d session, on H.R. 15205, a bill to amend the Natural Gas Pipeline Safety Act of 1968 to authorize additional appropriations. . . . June 13, 1974. Washington, U. S. Govt. Print. Off., 1974. p. 27-29. Letter of July 5, 1974 from Glenn J. Sedem, Jr., Deputy Assistant Secretary for Environment, Safety, and Consumer Affairs, Department of Transportation to Hon. Torbert H. MacDonald.

62/ See, National Cable Television v. United States, 415 U.S. 336 (1974). In a companion case, Federal Power Commission v. New England Power Co., 415 U.S. 345 (1974), the Supreme Court found that annual fees required by the Federal Power Commission of regulated electric and natural gas companies pursuant to the Independent Offices Appropriation Act of 1952 must be assessed in relation to the "benefits" derived from services rendered by the Commission.

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In this same hearing, representatives of the TransContinental Gas Pipeline Company testified about the recent rupture and explosion of their pipeline in Fauquier County, Virginia. In commenting on the DOT program, they said that the Federal regulations were helpful; they unified standards, made them more stringent in some cases, and helped reduce carelessness on the part of the less reliable operators.63/ But they also said that the DOT program did not affect their company much, and that their pipelines were safe before the passage of the 1968 Act and continued to be safe afterwards.

Following the hearing, the House Committee on Interstate and Foreign Commerce reported a bill authorizing appropriations through the Fiscal Year ending in 1976, and authorizing funding for the State grant-in-aid program.64/

The Senate conducted no oversight hearings that year on pipeline safety and, without committee action, passed the House version of the bill, which was signed into law.65/

The Pipeline Safety Program -- 1975-1976

In 1975, DOT reorganized and established the Materials Transportation Bureau (MTB), which was given responsibility over pipeline safety and hazardous materials. This put pipeline safety in an organization with higher status within DOT than before.66/ The Office of Pipeline Safety (OPS) became the Office for Pipeline Safety Operations (OPSO). With the regulations promulgated in previous

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63/ U. S. Congress. House. Committee on Foreign and Interstate Commerce. Subcommittee on Communications and Power. Natural Gas Pipeline Safety Act of 1968 Amendments. Hearing, 93d Congress, 2d session, on H.R. 15205, a bill to amend the Natural Gas Pipeline Safety Act of 1968 to authorize additional appropriations. . . . June 13, 1974. Washington, U. S. Govt. Print. Off., 1974. p. 30-35. Statement of John C. Boehm, Senior Vice President, Transcontinental Gas Pipeline Corporation.

64/ House Report 93-1296, 93d Congress, 2d Session (1974).

65/ Public Law 93-403, 88 Stat. 802 (1974).

66/ U. S. Congress. Senate. Committee on Commerce. Subcommittee on Surface Transportation. Natural Gas Pipeline Safety Act Amendments of 1975. Hearings, 94th Congress, 1st session, on S. 2042, to amend and strengthen the Natural Gas Pipeline Safety Act of 1968, and to authorize additional appropriations therefore; S. 2183, to amend the Natural Gas Pipeline Safety Act of 1968 as amended, to authorize additional appropriations, and for other purposes. Sept. 25 and 26, 1975. Washington, U. S. Govt. Print., Off., 1975. p. 23. Statement of Hon. John W. Barnum, Deputy Secretary, Department of Transportation.

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years, this Office now had authority for the safety regulation of onshore and offshore pipelines, and for associated storage facilities for hazardous materials in gas or liquid form, including LNG.

In the mid-70's, both the Federal enforcement program and the State programs continued to develop. OPSO had established five field offices by 1975, and increased their staff by twelve that year to operate these offices. All of the States except New Jersey were assuming part of the inspection and enforcement for intrastate pipelines. Forty-one States requested grants-in-aid from the Federal Government, and the appropriations for these grants had risen to $1,158,000 for FY 1975.67/ In 1976, the National Association of Regulatory Utility Commissioners (NARUC) testified that the Federal-State provisions of the pipeline safety programs were a "booming success", and that they were pleased with all aspects of the program.68/

Other activities of the DOT program were to conduct training and develop further regulations. OPSO conducted training schools for industry and State personnel to help them understand the regulations. By August 1975, over three thousand personnel had been trained. 69/ OPSO continued to work on the permanent LNG regulations, and also to prepare regulations particularly applicable to offshore pipelines.70/

67/ Ibid., p. 25.

68/ U. S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Energy and Power. Natural Gas Pipeline Safety Act Authorizations. Hearing, 94th Congress, 2d session, on H.R. 12168 and H.R. 12242, bills to amend the Natural Gas Pipeline Safety Act of 1968 to authorize additional appropriations. . . . Mar. 12, 1976. Washington, U. S. Govt. Print. Off., 1976, pp. 9-15. Statement of James McGirr Kelly, NARUC.

69/ U. S. Congress. Senate. Committee on Commerce. Subcommittee on Surface Transportation. Natural Gas Pipeline Safety Act Amendments of 1975. Hearings, 94th Congress, 1st session, on S. 2042, to amend and strengthen the Natural Gas Pipeline Safety Act of 1968, and to authorize additional appropriations therefore; S. 2183, to amend the Natural Gas Pipeline Safety Act of 1968 as amended, to authorize additional appropriations, and for other purposes. Sept. 25 and 26, 1975. Washington, U. S. Govt. Print., Off., 1975. p. 24. Statement of Hon. John W. Barnum, Deputy Secretary, Department of Transportation.

70/ 41 Fed. Reg. 34598 (August 16, 1976). The provisions of 49 C.F.R. 192 were amended to clarify the applicability of pipeline regulations to offshore gas pipelines. The scope of part 192 was enlarged by deleting certain exemptions for offshore gathering lines and certain regulations were modified to make them more appropriate for the hazards of the offshore environment.

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However, not all groups were satisfied with the DOT program in the 1970s. Representatives of the National Transportation Safety Board (NTSB), an independent agency in the Department of Transportation charged with transportation accident investigation responsibilities,71/ testified and suggested that the public lacked information on the locations of pipelines (to avoid digging into them) and information on how to respond to a gas leak.72/

William Jennings, the former Director of the OPS, also testified about several deficiencies in the pipeline safety program:

-- Inadequate LNG regulations;
-- Inadequate regulations covering emergency plans;
-- A failure to update regulations to allow the use of the best current technology;
-- Inappropriate application of onshore regulations to offshore pipelines; and
-- Lack of adherence to rulemaking procedures.73/

Jennings blamed these deficiencies on both DOT and Congress. He said that DOT requested, and Congress provided, too little funding for the Office. He also said that Congress did not provide sufficient oversight, and that DOT did not give pipeline safety a sufficiently high priority within DOT. He said, as an example of the low standing

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71/ The National Transportation Safety Board was established pursuant to Public Law 89-670, 80 Stat. 935 (1966), 49 U.S. Code Appendix Section 1901 et seq., the Department of Transportation Act. It has authority to investigate, "determine the facts, conditions, and circumstances and the cause or probable cause or causes of any...pipeline accident in which there is a fatality or substantial property damage" pursuant to 49 U.S. Code Appendix Section 1903(a)(1)(D).

72/ U. S. Congress. Senate. Committee on Commerce. Subcommittee on Surface Transportation. Natural Gas Pipeline Safety Act Amendments of 1975. Hearings, 94th Congress, 1st session, on S. 2042, to amend and strengthen the Natural Gas Pipeline Safety Act of 1968, and to authorize additional appropriations therefore; S. 2183, to amend the Natural Gas Pipeline Safety Act of 1968 as amended, to authorize additional appropriations, and for other purposes. Sept. 25 and 26, 1975. pp. 53-61. Washington, U. S. Govt. Print. Off., 1975. Statement of John H. Reed, Chairman, NTSB.

73/ U. S. Congress. Senate. Committee on Commerce. Subcommittee on Surface Transportation. Natural Gas Pipeline Safety Act Amendments of 1975. Hearings, 94th Congress, 1st session, on S. 2042, to amend and strengthen the Natural Gas Pipeline Safety Act of 1968, and to authorize additional appropriations therefore; S. 2183, to amend the Natural Gas Pipeline Safety Act of 1968 as amended, to authorize additional appropriations, and for other purposes. Sept. 25 and 26, 1975. pp. 62-64. Washington, U. S. Govt. Print. Off., 1975. Statement of William Jennings.

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of pipeline safety, that the national director of pipeline safety was only a GS-16, a grade achieved by some of the division chiefs and their assistants under the director.74/ Jennings recommended larger appropriations for OPSO, and more extensive congressional oversight to provide a stimulus for a more vigorous exercise of the Office's current authority.

New York State regulatory officials testified that they were unhappy with their inability to impose standards stricter than the national standards for interstate pipelines.75/ They also complained about the lack of technical rigor in DOT's audit of State programs, and the tendency of DOT to exert its authority beyond its resources, particularly in comparison to the resources and expertise in some of the States.

Another issue discussed was conflict between the jurisdiction of the Federal Power Commission (FPC) and DOT. The FPC felt that the NGPSA did not prevent it from exerting authority over some aspects of pipeline safety, through the imposition of conditions on new pipeline construction in certificates of convenience and necessity. Other witnesses thought that there was no need for overlapping jurisdiction.76/

Although there was not extensive litigation involving the Natural Gas Pipeline Safety Act of 1968, one case of importance was decided during this period. In 1975 a U.S. District Court found that the Natural Gas Pipeline Safety Act of 1968 did not create a private right of action for employees injured in an explosion allegedly caused by

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74/ Ibid., p. 64.

75/ U. S. Congress. Senate. Committee on Commerce. Subcommittee on Surface Transportation. Natural Gas Pipeline Safety Act Amendments of 1975. Hearings, 94th Congress, 1st session, on S. 2042, to amend and strengthen the Natural Gas Pipeline Safety Act of 1968, and to authorize additional appropriations therefore; S. 2183, to amend the Natural Gas Pipeline Safety Act of 1968 as amended, to authorize additional appropriations, and for other purposes. Sept. 25 and 26, 1975. pp. 77-86. Washington, U. S. Govt. Print. Off., 1975. Statement of George E. Bonner, New York State Public Utility Commission.

76/ U. S. Congress. Senate. Committee on Commerce. Subcommittee on Surface Transportation. Natural Gas Pipeline Safety Act Amendments of 1975. Hearings, 94th Congress, 1st session, on S. 2042, to amend and strengthen the Natural Gas Pipeline Safety Act of 1968, and to authorize additional appropriations therefore; S. 2183, to amend the Natural Gas Pipeline Safety Act of 1968 as amended, to authorize additional appropriations, and for other purposes. Sept. 25 and 26, 1975. pp. 101-121. Washington, U. S. Govt. Print. Off., 1975. Statement of Hon. John N. Nassikas, Chairman, Federal Power Commission.

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the negligent manufacture, installation, maintenance and operation of a city's natural gas supply system.77/

The 1976 Amendment to the Natural Gas Pipeline Safety Act

In 1976, with the authorization for funding under the Act about to expire, at the end of June, 1976, the House Commerce Committee held brief oversight hearings on the Act, reviewed DOT activities under the Act and assessed the budget justification.78/ Congressman John Dingell, Chairman of the Subcommittee on Energy and Power of the House Committee on Interstate and Foreign Commerce, expressed continued concern in oversight hearings regarding whether OPSO had enough resources to handle the increasing scope of its authority.79/ In recent years, OPSO had assumed increasing responsibility over the safety of LNG, offshore oil and gas pipelines, and the Alaska pipeline. Over this period, the resources of OPSO increased gradually, but DOT and the Office of Management and Budget consistently made budget requests below those that OPSO thought were optimal. (See following table III-1.)

77/ Doak v. City of Claxton, Georgia, 390 F. Supp. 753 (S.D. Georgia 1975).

78/ U. S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Energy and Power. Natural Gas Pipeline Safety Act Authorizations. Hearing, 94th Congress, 2d session, on H.R. 12168 and H.R. 12242, bills to amend the Natural Gas Pipeline Safety Act of 1968 to authorize additional appropriations. . . . Mar. 12, 1976. Washington, U. S. Govt. Print. Off., 1976.

79/ Ibid.

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TABLE III-1

OPSO Expenditures

Fiscal Year	Enforcement Staff	Salaries and Expenditures	Research and Development
1972	4	$513,105	$412,304
1973	5	625,096	161,895
1974	5	635,492	14,095
1975	21	819,526	242,227
1976	20	1,202,000	400,000

TABLE III-2

Office of Pipeline Safety Operations

Fiscal Year 1977 Budget Request

	MBT Request to DOT	DOT Request to OMB	President's Budget
1. Staffing	58 positions	50 positions	40 positions
2. Transportation Planning, Research and Development	$2,750,000	$ 900,000	$ 400,000
3. Grants-in-aid for pipeline safety	$2,500,000	$2,500,000	$2,500,000

Source for both tables: Information supplied by DOT for the Record in U.S. Congress. House. Committee on Foreign and Interstate Commerce. Subcommittee on Energy and Power. Natural Gas Pipeline Safety Act Authorizations. Hearings. 94th Congress, 2d session. Washington, U.S. Govt. Print. Off., 1976. p. 22.

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The House Committee on Interstate and Foreign Commerce reported a bill authorizing the funding through the 1976 change from a July to an October beginning of the fiscal year, and until the end of September 1977 (FY 1977).80/ The bill also provided for modified jurisdiction over natural gas pipelines by redefining the term "intrastate pipeline transportation". The Act as originally passed had defined the jurisdiction over safety by reference to transportation and facilities subject to the jurisdiction of the Federal Power Commission under the Natural Gas Act. At the time of the passage of the 1968 Act those facilities were assumed not to be under the jurisdiction of the Federal Power Commission. But the Supreme Court's decision in Federal Power Commission v. Louisiana Power and Light, in 1972 held that direct sales of natural gas in interstate commerce were subject to Federal Power Commission jurisdiction under the Natural Gas Act.81/ The addition of this new definition of "intrastate pipeline transportation" to the Natural Gas Pipeline Safety Act assured that the States would retain safety authority over intrastate pipelines engaging in direct sales.

The bill reported from the House Committee on Interstate and Foreign Commerce also allowed for certification of State agencies, whether or not they had adopted each Federal safety standard established within 120 days before the certification, in order to ease the administrative burden of last-minute compliance.

The Senate Commerce Committee also conducted oversight hearings in the 94th Congress.82/ Among other things, the hearings contain a summary of enforcement actions brought under the 1968 Act.83/ Following the hearings, the Senate Commerce Committee reported a bill that provided for several significant modifications in the 1968 Act.84/ Among other things, the Senate Commerce Committee bill required that the Technical Pipeline Safety Standards Committee meet at least twice each year. The bill also required State agencies to encourage and

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80/ House Report 94-1050, 94th Cong., 2d Sess. (1976).

81/ Federal Power Commission v. Louisiana Power and Light, 406 U.S. 321 (1972).

82/ U. S. Congress. Senate. Committee on Commerce. Subcommittee on Surface Transportation. Natural Gas Pipeline Safety Act Amendments of 1975. Hearings, 94th Congress, 1st session, on S. 2042, to amend and strengthen the Natural Gas Pipeline Safety Act of 1968, and to authorize additional appropriations therefore; S. 2183, to amend the Natural Gas Pipeline Safety Act of 1968 as amended, to authorize additional appropriations, and for other purposes. Sept. 25 and 26, 1975. Washington, U. S. Govt. Print. Off., 1975.

83/ Ibid., p. 38.

84/ Senate Report No. 94-852, 94th Cong., 2d Sess. (1976).

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promote programs to prevent damage to natural gas pipelines and other sub-surface equipment from excavation activity. The bill also required pipelines to conduct public education programs about the hazards of gas leaks.

The Senate Commerce Committee adopted provisions similar to those of the House Committee on Interstate and Foreign Commerce, with respect to modifying the jurisdiction relating to pipelines involved in direct sales. The Senate Commerce Committee also proposed to delete the requirements, under section 7 of the Natural Gas Act, which authorized the FPC to impose safety conditions beyond those adopted by DOT as a part of the certificate of convenience and necessity.

The Senate also provided for a greatly expanded grants-in-aid program to the states. The Senate bill also added a new section to the Act, allowing any person to commence a civil action for mandatory or prohibitive relief from violation of the 1968 Act. Finally, the Senate bill authorized expanded funding for the modifications called for in its version of the bill.

At conference, the Senate provisions concerning the Technical Pipeline Safety Standards Committee were not adopted, although the conferees did express disappointment with the Committee. The modified jurisdiction with respect to direct-sale facilities was adopted. With some modifications, the programs for consumer education and excavation were adopted. The Senate citizen suit provisions were adopted, and the grants-in-aid program was scaled down. With these and other minor changes, the conference version 85/ was adopted by both Houses and signed into law.86/

DOT Pipeline Program and Legislation--1977-1979

In the late 1970's, DOT continued to work at a wide range of activities that included conducting research into pipeline safety problems, conducting training programs for industry personnel, and working with the Department of Housing and Urban Development to help communities with limited resources upgrade their gas distribution systems.87/ They also continued work on regulations, but published few regulations during this period.

85/ House Report No. 94-1660, 94th Cong., 2d Sess. (1976).

86/ Public Law 94-477, 90 Stat. 2073 (1976).

87/ U. S. Congress. Senate. Committee on Commerce, Science, and Transportation. Authorizations for the Natural Gas Pipeline Safety Act. Hearings, 95th Congress, 2d session, on S. 1895, to amend the Natural Gas Pipeline Safety Act of 1968 to authorize appropriations for fiscal year 1979. Feb. 27, 1978. Washington, U. S. Govt. Print. Off., 1978. pp. 54-59. Statement of Dr. John J. Fearnsides, Department of Transportation.

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In 1978 DOT reorganized its pipeline safety operations. The functions of the old Office of Pipeline Safety Operations and Hazardous Materials Operations were redistributed within the Materials Transportation Bureau into an Office of Pipeline Safety Regulation, an Office of Hazardous Materials Regulation, an Office of Operation and Enforcement, and an Office of Program Support. The effect was to separate the regulatory responsibility from the compliance operations and to consolidate operational parts of pipeline safety and other hazardous material programs in one office. DOT also added two staff attorneys to evaluate and prosecute enforcement cases.88/

THE PIPELINE SAFETY ACT OF 1979

The move toward expanded Federal safety coverage of pipelines began in 1978 with the extensive hearings conducted in both the House and the Senate. In the Senate, hearings before the Senate Commerce Committee included witnesses from the Department of Transportation who asked for additional resources and outlined their recent activities.89/ At the hearings, representatives from NARUC again lauded the State Programs Division of OPSO. NARUC credited this program with providing useful training programs to the States, improving two-way communications between the OPSO and the States, and with streamlining the collection of data by the states.90/ These programs were accomplished with only three DOT staff persons. NARUC also testified

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88/ U. S. Congress. House. Committee on Public Works and Transportation. Subcommittee on Surface Transportation. Pipeline Safety Act of 1979. Hearings, 96th Congress, 1st session, on H.R. 2207: to improve the protections afforded against [hazards] associated with the transportation of hazardous commodities by pipeline, and H.R. 51: to amend the Natural Gas Pipeline Safety Act of 1968 to provide for the safe operation of pipelines transporting natural gas and liquefied petroleum gas, to provide standards with respect to the siting, construction, and operation of liquefied natural gas facilities, and for other purposes. May 1 and June 8, 1979. Washington. U.S. Govt. Print. Off., 1979. pp. 46-59. Statement of Dr. James D. Palmer, Department of Transportation.

89/ U. S. Congress. Senate. Committee on Commerce, Science, and Transportation. Subcommittee for Consumers. Authorizations for the Natural Gas Pipeline Safety Act. Hearings, 95th Congress, 2d session, on S. 1895, to amend the Natural Gas Pipeline Safety Act of 1968 to authorize appropriations for fiscal year 1979. Feb. 27, 1978. pp. 13-23. Washington. U. S. Govt. Print. Off., 1978.

90/ U. S. Congress. Senate. Committee on Commerce, Science and Transportation. Subcommittee for Consumers. Authorizations for the Natural Gas Pipeline Safety Act. Hearings, 95th Congress, 2d session, on S. 1895, to amend the Natural Gas Pipeline Safety Act of 1968 to authorize appropriations for fiscal year 1979. Feb. 27, 1978. Washington. U. S. Govt. Print. Off., 1978, pp. 8-13. Statement of Paul Rodgers National Association of Regulatory Utility Commissioners.

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that they believed the Technical Pipeline Safety Standards Committee "is crucial to the success of the Federal-State gas pipeline safety effort."91/ The Committee had come under fire from the Carter Administration, which viewed this and other technical advisory committees to be too industry-dominated to serve the public good.

Representatives of the General Accounting Office appeared before the Committee and made various observations with respect to the absence of Federal regulation of hazardous material pipelines:

> Regulations still did not cover certain types of pipeline, such as gathering lines in rural areas.
>
> Existing LNG standards were based on a code developed by the National Fire Protection Association, which was not seen as completely adequate.
>
> Stronger safety standards were seen to be needed for highly volatile liquids, such as anhydrous ammonia and liquified petroleum gas.
>
> Liquid standards were seen as providing less protection than the gas standards.
>
> There had not been a systematic review of regulations since they were adopted.
>
> State pipeline safety programs were given insufficient guidance as to what were adequate levels of inspection and enforcement. There was little quality control on state programs.
>
> Federal inspection and enforcement procedures were viewed as being less than desirable.
>
> The pipeline safety data that OPSO collected was viewed as lacking some vital information, and was not being sufficiently used. The federal pipeline safety program had a permanent director for only three of its ten years which raised "...serious questions as to the priority given the pipeline safety program by the Department.
>
> OPSO's staff was viewed as understaffed to fulfill its legislative mandate.92/

91/ Ibid.

92/ Ibid., pp. 19-22.

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A General Accounting Office report, entitled "Pipeline Safety--Need for a Stronger Federal Effort," was prepared shortly after the Senate hearings and provided more extensive analysis of the recommendations that GAO had made at the hearings.93/ Recommendations were made in the Report to expand safety regulation of LNG facilities.

The Senate Commerce Committee also published a Committee Print concerning LNG safety.94/ The Committee Print documented a Congressional Research Service seminar on LNG safety issues and also contained several background reports on various related issues.

The House Commerce Committee also held hearings that focused on liquefied natural gas safety.95/ Those hearings drew testimony and discussion of three major legislative proposals pending before the Committee, all of which would have strengthened legislative authority to promulgate Federal standards for the construction, siting, and operation of LNG facilities, natural gas facilities, and hazardous materials pipelines. Extensive testimony was received from regulators, environmentalists, industry representatives and others with regard to LNG tankers, loading facilities, spills, and leakage problems. Coast Guard regulations relating to leakage were examined and several pertinent articles on safety were included in the published hearings.

The next year, 1979, several major legislative proposals were introduced in Congress, and both the House and Senate held oversight hearings and reported new legislation expanding regulation over hazardous materials pipelines and modifying natural gas pipeline safety authority.

The House Public Works Committee hearings were held on two bills: H.R. 51 and H.R. 2207, the Administration's bill. The bill H.R. 51 would have increased legislative authority to regulate LNG

93/ U.S. General Accounting Office. Pipeline Safety--Need for a Stronger Federal Effort; Report to the Congress by the Comptroller General of the United States. GAO/CED-78-99. Washington, 1978.

94/ Liquefied Natural Gas: Safety, Siting, and Policy Concerns, Committee Print, Senate Committee on Commerce, Science, and Transportation, 96th Congress, 2d Session (1978).

95/ U. S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Energy and Power. LNG Facility and Pipeline Safety. Hearings, 95th Congress, 2d session, on H.R. 6844, H.R. 11586, and H.R. 11622, bills to provide for the safe operation of pipelines transporting natural gas, petroleum, petroleum products, and certain other materials; to provide standards with respect to the siting, construction and operation of liquefied natural gas and liquid petroleum gas facilities; and for other purposes. Feb. 20, 21, 22; Mar. 20 21, 22; and Apr. 7, 13, 14, 1978. Washington, U. S. Govt. Print. Off., 1978.

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facility safety and H.R. 2207 would have strengthened legislative authority over hazardous commodity pipeline safety, for such commodities as petroleum gas and anhydrous ammonia.96/ The Federal Energy Regulatory Commission (successor to the Federal Power Commission) submitted a memorandum prepared by Robert Nordhaus, FERC General Counsel, outlining the case law that established that LNG was not regarded as natural gas for the purposes of the Natural Gas Pipeline Safety Act.97/ NARUC also supported the new legislation. It complimented DOT on their Federal-State program for natural gas pipelines and supported a similar Federal-State program for liquid pipeline regulation.98/

Industry representatives argued that further legislation was not required because pipelines already had an outstanding safety record compared to other forms of transportation, and that the present levels of regulation were adequate.99/

The Senate Commerce Committee also held three days of hearings with respect to expanded safety regulation proposals pending before

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96/ U. S. Congress. House. Committee on Public Works and Transportation. Subcommittee on Surface Transportation. Pipeline Safety Act of 1979. Hearings, 96th Congress, 1st session, on H.R. 2207: to improve the protections afforded against [hazards] associated with the transportation of hazardous commodities by pipeline, and H.R. 51: to amend the Natural Gas Pipeline Safety Act of 1968 to provide for the safe operation of pipelines transporting natural gas and liquefied petroleum gas, to provide standards with respect to the siting, construction, and operation of liquefied natural gas facilities, and for other purposes. May 1, and, June 8, 1979. Washington, U. S. Govt. Print. Off., 1979.

97/ Ibid.

98/ U. S. Congress. House. Committee on Public Works and Transportation. Subcommittee on Surface Transportation. Pipeline Safety Act of 1979. Hearings, 96th Congress, 1st session, on H.R. 2207: to improve the protections afforded against [hazards] associated with the transportation of hazardous commodities by pipeline, and H.R. 51: to amend the Natural Gas Pipeline Safety Act of 1968 to provide for the safe operation of pipelines transporting natural gas and liquefied petroleum gas, to provide standards with respect to the siting, construction, and operation of liquefied natural gas facilities, and for other purposes. May 1, and, June 8, 1979. pp. 227-245. Washington, U. S. Govt. Print., 1979. Statement of Paul Rodgers, NARUC.

99/ Ibid.

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it.100/ In May, 1979, the Senate Commerce Committee reported S. 411, a companion bill to the Administration's bill in the House, H.R. 2207, containing two titles — one to amend the Natural Gas Pipeline Safety Act and another to propose a new law for the safety regulation of hazardous liquid pipeline transportation.101/

Generally, title I of S. 411 amended the 1968 Act to (1) clarify DOT's authority to regulate LNG facilities, (2) clarify that safety standards applicable only to new natural gas facilities could be made applicable to existing facilities that are hazardous to life and property, (3) continue to allow States to adopt standards for intrastate pipelines that are more stringent than Federal standards, (4) expand DOT enforcement power, and (5) authorize funding through the Fiscal Year ending September 30, 1981.

With respect to the provisions in title II, the Senate bill established new hazardous liquids safety authority to (1) repeal the antiquated Transportation of Explosives Act, (2) establish regulatory authority over hazardous liquids moving by pipeline similar to the regulation under the Natural Gas Safety Act of 1968, (3) authorize the Secretary of Transportation to promulgate safety standards and assure compliance, (4) establish for hazardous liquids a State enforcement and grant-in-aid program similar to the Natural Gas Safety Act of 1968, and (5) establish administrative and judicial remedies, and record-keeping requirements, similar to the 1968 Act.

On the same day the Senate Commerce Committee issued its report, the House Commerce Committee reported H.R. 51.102/ Briefly, the purpose of the House Commerce Committee bill was to (1) authorize DOT appropriations under the 1968 Act, (2) expand the authority of the Secretary over hazardous conditions, (3) bring liquefied petroleum gas (LPG) under the 1968 Act, (4) direct the Secretary to establish and enforce certain additional standards for liquefied natural gas facilities, and (5) authorize the Secretary to assure that financial responsibility was maintained in the production, transmission, and storage of liquefied petroleum gas and liquefied natural gas.

100/ U. S. Congress. Senate. Committee on Commerce, Science, and Transportation. Pipeline Safety Act of 1979. Hearings, 96th Congress, 1st session, to improve the protections afforded the public against risks associated with the transportation of hazardous commodities by pipeline. Feb. 8, Apr. 25 and 26, 1979. Washington, U. S. Govt. Print. Off., 1979.

101/ Senate Report No. 96-182, 96th Cong., 1st Sess. (1979).

102/ House Report 96-201 (Part I), 96th Cong., 1st Sess. (1979).

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In June 1979, the House Committee on Public Works and Transportation reported a version of H.R. 51 similar to that of the House Commerce Committee.103/

Near the end of the first session of the 96th Congress, the House passed the Senate bill without amendment, and the bill was signed into law and became the Pipeline Safety Act of 1979.104/

Pipeline Safety Activities--1979-1983

Activities in the Congress

In 1981, the Senate Commerce Committee held oversight hearings concerning the 1979 legislation.105/

In these hearings, NARUC testified on the need to maintain adequate funding for the pipeline safety program. The budget for pipeline safety for State grants had been cut in the first-year budget of the Reagan Administration, which seemed likely to restrict the ability of States to assist the Federal Government in inspecting and enforcing compliance with pipeline safety regulations.106/

In April, 1981, the House Subcommittee on Surface Transportation held a brief hearing on pipeline safety.107/ At the hearing, Lee D. Santman, Associate Director of the Materials Transportation Bureau of the Department of Transportation was the principal witness. He outlined the several activities of DOT since the enactment of the 1979 legislation with respect to gas pipelines, hazardous liquid pipelines,

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103/ House Report 96-201 (Part II), 96th Cong., 1st Sess. (1979).

104/ Public Law 96-129, 93 Stat. 989 (1979).

105/ U. S. Congress. Senate. Committee on Commerce, Science and Transportation. Subcommittee on Surface Transportation. Hazardous Materials Transportation Act, Natural Gas Pipeline Safety Act, and Hazardous Liquid Pipeline Safety Act Authorizations. Hearings, 97th Congress, 1st session, on S. 960. Apr. 28, 1981. Washington, U. S. Govt. Print. Off., 1981.

106/ U. S. Congress. Senate. Committee on Commerce, Science and Transportation. Subcommittee on Surface Transportation. Hazardous Materials Transportation Act, Natural Gas Pipeline Safety Act, and Hazardous Liquid Pipeline Safety Act Authorizations. Hearings, 97th Congress, 1st session, on S. 960. Apr. 28, 1981. Washington, U. S. Govt. Print. Off., 1981. pp. 38-41. Statement of Paul Rodgers, NARUC.

107/ U. S. Congress. House. Committee on Public Works and Transportation. Subcommittee on Surface Transportation. Pipeline Safety. Hearing, 97th Congress, 1st session. Apr. 7, 1981. Washington, U. S. Govt. Print. Off., 1981.

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and siting, design, construction, operation and maintenance of LNG facilities. In addition, he requested on behalf of the Department of Transportation that $7.064 million be authorized for Fiscal Year 1982, of which $3.446 million were to be for administration, operation, and research expenses associated with the Materials Transportation Bureau's gas pipeline program and the remaining $3.618 million were to be used as grant-in-aid monies in support of State administered gas pipeline safety programs. A request of $1 million was made for the Materials Transportation Bureau's expenses in the Hazardous Liquid Act, to carry out the liquid pipeline safety program.

Thereafter, the House Public Works Committee reported a bill providing the level of authorization requested and making certain minor amendments to the organic Acts 108/ --but no further action was taken on the bill by the Congress.

Activities of the Department of Transportation

In 1981 much of DOT's rulemaking was to revoke regulations that DOT had determined did not accomplish their intended purpose, were not cost-effective, or for which DOT did not have enough information to determine that the rules "would result in net benefits to society."109/ Other aspects of the program changed little. They modified the hazardous liquid regulations to reflect the new authority under the 1979 Act but did not promulgate the intrastate pipeline regulations required under the Act--stating that they were examining the costs and benefits of establishing the regulations.110/ Other amendments were to update the regulations to reference the latest industry codes and to modify the hazardous liquid regulations to reflect the authority of the 1979 Act.111/

The grants to the States to support their pipeline safety program, for the first time, fell below the 50% of total State expenditures

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108/ House Report 97-89 (Part I), 97th Cong., 1st Sess. (1981).

109/ U.S. Department of Transportation, Materials Transportation Bureau. Annual Report on Pipeline Safety: Calendar Year 1981. Washington, U.S. Department of Transportation. 1982. p. 2 and p. 37. For example, Amendment 195-20B to 49 C.F.R. Part 195 revoked a final rule to monitor the water content of anhydrous ammonia transported by interstate pipelines.

110/ Ibid., p. 46.

111/ Ibid., p. 2 and p. 37.

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allowed by statute, to 42%, 112/ and DOT was concerned about the future funding of the State programs.113/

NARUC was also concerned that the cuts would restrict the ability of States to assist the Federal Government in inspecting and enforcing compliance with pipeline safety regulations.114/

DOT also identified several areas where work was needed.115/ One was the need to update the regulations more quickly to incorporate revisions in industry standards that allowed improved technology, such as standards allowing the most advanced steel to be used in pipelines. Another was the need to review regulations, many of which had not been modified since 1968. A third was the need to address the problem of master meter systems, which many States were not regulating and which DOT did not have the resources to adequately inspect. A final problem that needed addressing was the damage of pipelines from outside forces, typically someone digging or drilling into a pipeline. This was the largest cause of pipeline accidents.

Similar trends continued in 1982 and 1983. DOT revised or removed some regulations that were judged not to be cost-effective, and published regulations designed to prevent damage to pipelines from outside forces.116/ DOT initiated studies of LNG siting regulations to determine if they could reduce the size of the exclusion zone around

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112/ U.S. General Accounting Office. Need to Assess Federal Role in Regulating and Enforcing Pipeline Safety; Report to the Congress by the Comptroller General of the United States. GAO/RCED-84-102. Washington, 1984. p. 60.

113/ U.S. DOT, Annual Report on Pipeline Safety: Calendar Year 1981, p. 35.

114/ U. S. Congress. Senate. Committee on Commerce, Science and Transportation. Subcommittee on Surface Transportation. Hazardous Materials Transportation Act, Natural Gas Pipeline Safety Act, and Hazardous Liquid Pipline Safety Act Authorizations. Hearings, 97th Congress, 1st session, on S. 960. Apr. 28, 1981. Washington, U. S. Govt. Print. Off. 1981. pp. 38-41. Statement of Paul Rodgers, NARUC.

115/ U.S. DOT, Annual Report on Pipeline Safety: Calendar Year 1981, pp. 33-35 and 46.

116/ 47 Fed. Reg. 13818 (Apr. 1, 1982). This rule requires gas pipeline operators to have, or to participate in, a damage prevention program to reduce the risk of excavation damage to pipelines in populated areas.

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the plants without creating unacceptable risks.117/ They also identified other areas of work, including writing regulations in terms of performance standards--telling the operators what performance levels to meet rather than how to meet them. DOT still did not publish regulations for intrastate liquid pipelines. In addition, budget cuts had limited the grants to the States, making it questionable whether some States would continue with the program, and making States less enthusiastic about participating in a hazardous liquids program.

In 1983, DOT amended the regulations to make it easier for industry to use the latest types of steel pipe,118/ to allow for the more cost-effective repair of girth weld defects,119/ and to revoke regulations requiring the marking of pipelines at the crossings of navigable waters.120/

DOT again failed to establish an intrastate hazardous liquids pipeline safety program, as provided for under the 1979 Act. Grants to the States increased somewhat over 1982 but still remained below the 50% of actual State expenditures that were permitted by law.121/ Funds for the States increased to reimburse 37% of the State program expenses, up from 25% in 1982 but still under the 50% permitted by the NGPSA.122/

Litigation in the Courts

During the early 1980s, there were a few important court decisions involving the Federal pipeline safety program. In 1981, the U.S. District Court in Minnesota decided a case arising from a Minnesota county condition imposed in a construction permit granted to Northern Border Pipeline for the eastern leg of the Alaska Natural Gas Transportation System. The condition required that the gas line be buried a minimum of six feet.123/ Despite county arguments that the requirement was an environmental protective measure--or, alternatively, a zoning measure--and not a safety measure, the Court found

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117/ U.S. Department of Transportation, Materials Transportation Bureau. Annual Report on Pipeline Safety, Calendar Year 1982. Washington. U.S. Department of Transportation, 1984, p. 34.

118/ 48 Fed. Reg. 30637 (July 5, 1983).

119/ 48 Fed. Reg. 48669 (Oct. 20, 1983).

120/ 48 Fed. Reg. 25206 (June 6, 1983).

121/ U.S. Department of Transportation. Annual Report on Pipeline Safety: Calendar Year 1983 (October 1984 draft). p. 14 and p. 9.

122/ Ibid., p. 9.

123/ Northern Border Pipeline v. Jackson County, Minnesota, 512 F. Supp. 1261 (D. Minnesota 1981).

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that the Natural Gas Pipeline Safety Act preempted the entire field of gas pipeline safety and invalidated the State burial requirement.

Similarly, the Fifth Circuit held in Natural Gas Pipeline Co. v. Railroad Commission of Texas 124/ that Congress had ordained the field of natural gas pipeline safety for exclusive Federal regulation and invalidated a Railroad Commission regulation relating to safeguards against the accidental release of hydrogen sulfide from a pipeline's purification plant.

In a separate and somewhat more limited decision, another court held that--in order for a pipeline to be regarded as a "gathering line" for the purposes of the lesser burial requirements under the Act--the pipeline must be directly attached to a gas well.125/

And finally in an Oklahoma Supreme Court decision, Barnes v. Transok Pipeline Co.,126/ the Court held that an intrastate natural gas pipeline constructed in accordance with State safety standards for rural areas did not deny equal protection of law under the Fourteenth Amendment of the U.S. Constitution on the theory that the State had adopted stricter standards for pipelines constructed in urban areas. In so holding, the Court sustained State Corporation Commission findings that the pipeline in question was constructed with pipe that was inadequate and improperly placed too near a habitable residence.

Although there has not been extensive litigation under the Natural Gas Pipeline Safety Act of 1968, the principal issue (about which there is apparently a present split of judicial authority) has concerned whether or not the Act, and the regulations promulgated under it, have totally preempted the field of interstate pipeline safety regulation--thereby preventing any State regulation. Although the weight of authority appears to hold that the Act does preempt the entire field of interstate pipeline regulation, the matter is not entirely settled.

There has been a substantial amount of litigation involving liability for pipeline accidents. There are a substantial number of court cases that have dealt with questions of liability of pipeline companies for injury or property damage resulting from pipeline accidents.127/

124/ 679 F.2d 51 (5th Cir. 1982).

125/ Hannan v. Southwestern Gas Pipeline, Inc., 721 F. 2d 140 (5th Cir. 1983).

126/ 549 P.2d 819 (Sup. Ct. Okla. 1981).

127/ See for example, "Annotation: Liability of One Maintaining Pipeline For Transportation of Gas or Other Dangerous Substances for Injury or Property Damage Sustained by One Using Surface," 30 A.L.R. 3d 691.

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1984 Reauthorizing Legislation Under the 1968 and 1979 Acts

In 1984, the Senate Commerce Committee held hearings on authorizations.128/ Following those hearings, the Committee reported an bill authorizing appropriations of $7,200,000 and $7,668,000 for Fiscal Years 1985 and 1986 respectively, to carry out the Natural Gas Pipeline Safety Act of 1968, and authorizing appropriations of $1,400,000 and $1,543,000 for Fiscal Years 1985 and 1986, respectively, to carry out the Hazardous Liquid Pipeline Safety Act of 1979.129/

In March, 1984, the House Subcommittee on Fossil and Synthetic Fuels held a hearing on pipeline safety.130/ At that hearing, Oliver W. Krueger of the General Accounting Office testified with regard to GAO's review of the Department of Transportation's pipeline safety program and raised a number of issues that were critical of DOT implementation of the law. The GAO also noted that, in part due to a decrease in Federal grants to the States, fifteen States had staffing or funding cutbacks in recent years and four States were considering dropping out of the natural gas safety program. The Subcommittee raised questions about the adequacy of DOT staffing and funding, the adequacy of DOT's research and development, the status of DOT's long-delayed intrastate hazardous liquid pipeline safety regulations, the adequacy of DOT's data base for establishing inspection priorities, the adequacy of DOT's master meter program, and several other issues.131/ And, among other things, the Subcommittee staff reported on the Colonial Pipeline Accident of March 6, 1980, near Manassas, Virginia.

The House Committee on Energy and Commerce reported a one-year authorization for the 1968 Act and the 1979 Act, totalling $8.2 million. The sum of $3.8 million was authorized for salaries and

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128/ U. S. Congress. Senate. Committee on Commerce, Science and Transportation. Subcommittee on Surface Transportation. Reauthorizations for Hazardous Materials Transportation and Pipeline Safety. Hearing, 98th Congress, 2d session. Apr. 24, 1984. Washington, U. S. Govt. Print. Off., 1984.

129/ Senate Report 98-456, Senate Committee on Commerce, Science, and Transportation, 98th Congress, 2d Sess. (1984).

130/ U. S. Congress. House. Committee on Energy and Commerce. Subcommittee on Fossil and Synthetic Fuels. DOT's Pipeline Safety Program. Hearings, 98th Congress, 2d session, on H.R. 3314 and H.R. 5058, bills to amend the Hazardous Liquid Pipeline Safety Act of 1979 and the Natural Gas Pipeline Safety Act of 1968. Mar. 13 and 27, 1984. Washington, U. S. Govt. Print. Off., 1984.

131/ Ibid., pp. 71-85. Questions submitted by the Subcommittee to the Materials Transportation Bureau of the U.S. Department of Transportation.

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natural gas pipeline safety; $3.8 million were authorized for state grants-in-aid for gas pipeline safety; and $900,000 were authorized for hazardous liquid pipeline safety.132/ The Committee-reported bill also provided for a study on the safety, feasibility, and economics of methanol movement in pipelines and directed DOT to study new approaches for inspecting and verifying the safety of pipelines using state-of-the-art technology.

The House Subcommittee on Surface Transportation, of the House Committee on Public Works and Transportation, also held hearings on pipeline safety in March of 1984.133/ At the hearing, William Smeigh testified on behalf of the National Association of Regulatory Utility Commissioners and urged the Committee to commence the State program on intrastate hazardous liquid programs. Funds had not been appropriated for the grants-in-aid despite the existence of the Federal authority for four years.

The House Committee on Public Works and Transportation reported an authorization for appropriations, for both Acts, for Fiscal Year 1985: $3.5 million for the Natural Gas Pipeline Safety Act; $3.5 million for the State grant program; $900,000 for the Hazardous Liquid Pipeline Safety Act; and, $500,000 for the hazardous liquid State grant program.134/ The reported bill also required the methanol pipeline study and a testing study for hazardous liquid pipelines.

On October 11, 1984, the President approved Public Law 98-464, which authorized $3.472 million under the Natural Gas Pipeline Safety Act of 1968, $3.728 million for State grants-in-aid, and $500,000 under the Hazardous Liquid Pipeline Safety Act, for the Fiscal Year ending September 30, 1985. In addition the Act directed the Secretary of Transportation to study the feasibility of, and costs connected with, requiring various methods of testing and inspecting hazardous liquid pipeline facilities. The methanol feasibility study was also required.

The Act further directed owners or operators of interstate transmission facilities to submit a report within six months to the Secretary of Transportation, identifying all pipeline facilities for which construction was completed prior to January 1, 1940, and the

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132/ House Report 98-780 (Part 2), House Committee on Energy and Commerce, 98th Cong., 2d Sess. (1984).

133/ U. S. Congress. House. Committee on Public Works and Transportation. Subcommittee on Surface Transportation. Authorizations for the Natural Gas Pipeline Safety Act of 1968; the Hazardous Liquid Pipeline Safety Act of 1979; and the Hazardous Materials Transportation Act of 1974. Hearing, 98th Congress, 2d session. Mar. 21, 1984. Washington, U. S. Govt. Print. Off., 1984.

134/ House Report 98-790 (Part 1), House Committee on Public Works and Transportation, 98th Cong., 2d Sess. (1984).

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most recent leak-survey information for those facilities. The Secretary was directed to identify and inspect, in the subsequent four months, facilities that could be hazardous to life and property.

The 1984 GAO Report on Pipeline Safety

In July, 1984, the General Accounting Office released a major study on the Federal pipeline regulatory program, entitled "Need to Assess Federal Role in Regulating and Enforcing Pipeline Safety," prepared at the request of Congressman Philip R. Sharp, Chairman of the Subcommittee on Fossil and Synthetic Fuels of the House Committee on Energy and Commerce.135/

The GAO Report reached several conclusions regarding the overall status and effectiveness of the Department of Transportation pipeline safety program, including the following observations:

--DOT is not meeting its goal of performing annual inspections of each pipeline operator;

--Federal responsiblities need to be better aligned with DOT's resources;

--Federal pipeline inspections can be improved;

--DOT's monitoring of state pipeline safety programs could be improved; and

--Additional pipeline facilities (rural gas gathering lines, gas service lines, hazardous liquids storage facilities) and various hazardous commodities may need regulating.

In addition to these major recommendations, the GAO Report expressed many specific concerns and offered a series of specific recommendations to the Department of Transportation.

The GAO also summarized important gas and hazardous liquids pipeline accident and casualty data (see the Table III-3).

135/ U.S. General Accounting Office. Need to Assess Federal Role In Regulating and Enforcing Pipeline Safety. Report to the Congress by the Comptroller General of the United States. GAO/RCED-84-102. Washington, 1984.

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TABLE III-3

SUMMARY OF GAS AND HAZARDOUS LIQUIDS PIPELINE

ACCIDENT AND CASUALTY DATA REPORTED

1973 THROUGH 1983

	Gas Pipelines			Hazardous Liquids Pipelines			
Report Year	Failures	Fatalities	Injuries	Failures	Fatalities	Injuries	Commodity Loss (barrels)
1973	1,363	35	352	273	7	10	377,672
1974	1,477	24	334	256	10	6	292,001
1975	1,373	14	237	254	7	17	318,278
1976	1,579	63	366	212	5	4	249,690
1977	1,996	36	450	237	3	15	224,794
1978	2,088	31	406	256	3	10	280,794
1979	1,970	45	406	251	4	13	548,669
1980	1,996	11	310	219	3	12	289,445
1981	1,623	16	79	239	5	32	214,384
1982	1,711	31	266	200	1	6	221,411
1983	1,580	12	245	161	6	9	384,670

Source: U.S. General Accounting Office. Need to Assess Federal Role in Regulating and Enforcing Pipeline Safety; Report to the Congress by the Comptroller General of the United States. GAO/RCED-84-102. Washington, 1984. Appendix I, p. 70.

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In April, 1985, the Department of Transportation issued final rules for the regulation of intrastate hazardous liquid transportation.136/ The new rules became effective on October 21, 1985, the State grant program was to commence in Fiscal Year 1986.

1985 Reauthorizing Legislation Under the 1968 and 1979 Acts

The 1984 GAO Report defined many of the policy issues for consideration by the 99th Congress. In 1985, the Senate Committee on Commerce, Science, and Technology held a hearing to consider appropriate funding levels for Fiscal Years 1986 and 1987, for DOT's pipeline safety program.137/ The Committee considered what DOT had done or was planning to do in response to the GAO report. DOT reported on several actions that it had taken or would be taking to improve its inspection coverage of pipeline operators and to monitor State programs. DOT reported that it had undertaken a study to examine possible additional pipeline activities to include in its program. Among other things, DOT requested that the Congress merge the funding for the two State grants-in-aid programs on natural gas and hazardous liquids, because the good safety record of the hazardous liquid pipelines could not justify a DOT request for funding to cover the costs of States starting up hazardous liquid pipeline programs.

Following the hearing, the Senate Committee on Commerce, Science, and Transportation reported authorizations for pipeline safety.138/

The bill would authorize DOT appropriations of $3,450,000 and $3,615,000 for Fiscal Years 1986 and 1987, respectively, in order to carry out its activities under the Natural Gas Pipeline Safety Act of 1968. To carry out DOT activities under the Hazardous Liquid Pipeline Safety Act of 1979, $4,500,000 and $4,716,000 was authorized to be appropriated for Fiscal Years 1986 and 1987, respectively. In addition, $4,500,000 and $4,716,000 was authorized to be appropriated for Fiscal Years 1986 and 1987, respectively, for the State grants-in-aid pipeline programs.

In the House of Representatives on April 17, 1985, H.R. 2092, a bill to authorize appropriations for natural gas and hazardous liquid pipeline safety, was jointly referred to the Committee on Energy and Commerce and the Committee on Public Works and Transportation.

136/ 50 Fed. Reg. 15895 (Apr. 23, 1985).

137/ U. S. Congress. Senate. Committee on Commerce, Science, and Transportation. Reauthorizations for Hazardous Materials Transportation and Pipeline Safety. Hearing, 98th Congress, 2d session. Apr. 24, 1984. Washington, U. S. Govt. Print. Off., 1984.

138/ Senate Report 99-28, 99th Cong., 1st Sess. (1985).

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The House Public Works and Transportation Committee held a hearing on April 30, 1985.139/ At the hearing, M. Cynthia Douglass, Administrator of the Research and Special Programs Administration, testified on behalf of the Department of Transportation and requested that Congress merge the grants-in-aid programs for natural gas pipeline safety and hazardous liquids pipeline safety:

> This year we are requesting that Congress merge the two grant programs and authorize $4.5 million for the merged program. While this amount does not reflect additional dollars for the hazardous liquid program, it does have two distinct advantages. First, it gives flexibility to the States to direct their safety dollars to those pipelines which have the biggest safety problem, whether natural gas or hazardous liquid. Second, it encourages those States with hazardous liquid pipelines to adopt the Federal intrastate standards. We believe a merger of the programs makes safety sense. It will also best serve our administrative needs by providing an efficient unified approach to the operation of substantially identical programs.140/

Dale Johnson, on behalf of the National Association of Regulatory Utility Commissioners, noted that despite five years of a Federal-State partnership on liquid pipeline safety, funds had never been appropriated for the Federal grants-in-aid.141/

On May 15, 1985, the Committee on Public Works and Transportation favorably reported 142/ an amendment in the nature of a substitute for H.R. 2092, which included section 4, a provision limiting the power of States to tax interstate natural gas transmission property. The reported bill provided that certain acts unreasonably burden and discriminate against interstate commerce, including (1) assessing natural gas property and levying taxes on it at a ratio higher than the ratio of assessment value to true market value for other commercial and industrial property, and (2) levying ad valorem property taxes on natural gas transmission property at a higher rate than the tax rates for other commercial and industrial property. In addition, the reported bill provided for a unified authorization for the two State grants-in-aid programs.

139/ U. S. Congress. House. Committee on Public Works and Transportation. Hearing, 99th Congress, 1st session. Apr. 30, 1985. [Not yet printed.]

140/ See, House Report 99-121 (Part 1), House Committee on Public Works and Transportation, 99th Cong., 1st Sess. (1985), at 3.

141/ Ibid.

142/ House Report 99-121 (Part 1), House Committee on Public Works and Transportation, 99th Cong., 1st Sess. (1985).

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The Subcommittee on Fossil and Synthetic Fuels, of the House Committee on Energy and Commerce, held a hearing on April 16, 1985.143/ At the hearing, representatives from the General Accounting Office testified on the progress of DOT to correct the problems raised by the July, 1984, GAO Report. GAO indicated that DOT could improve the accuracy and usefulness of its data collection and implement a user fee that has "minimal impact" on pipeline companies and consumers.144/

The Committee on Energy and Commerce favorably reported H.R. 2092 on May 21, 1985, without provisions relating to State pipeline taxation.145/ The Committee-reported bill authorized appropriations for only one year--in order to allow for the consideration of, and report to the Congress on, the introduction of user fees to finance the pipeline safety program and to allow for the consideration of merger of the gas and hazardous liquids programs. In addition, the Committee substitute required DOT to publish in the Federal Register the method by which it allocates funds to the States under the grants program.

The House Committee on the Judiciary was granted sequential referral of H.R. 2092 for consideration of the provisions of section 4 that fall within its jurisdiction. On June 12, 1985, the Subcommittee on Monopolies and Commercial Law held a hearing on the matter.146/ Several witnesses testified before the Subcommittee on the tax discrimination prohibition provisions. Supporters of the provisions noted that 14 States 147/ currently place higher ad valorem tax burdens on interstate gas pipelines than on other commercial or industrial property with no direct interstate connection. Other supporters testified that higher State property taxes were also levied on interstate pipelines than on other commercial and industrial property. Opponents to the tax discrimination prohibition provisions argued that the bill was special interest legislation designed to give the interstate gas pipeline industry Federal protection from State taxation not enjoyed by

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143/ U. S. Congress. House. Committe on Energy and Commerce. Subcommittee on Fossil and Synthetic Fuels. Hearing, 99th Congress, 1st session. Apr. 16, 1985. [Not yet printed.]

144/ Ibid., p. 6.

145/ House Report 99-121 (Part 2), House Committee on Energy and Commerce, 99th Cong., 1st Sess. (1985).

146/ U. S. Congress. House. Committee on the Judiciary. Subcommitte on Monopolies and Commercial Law. Hearing, 99th Congress, 1st session. June 12, 1985. [Not yet printed.]

147/ Alabama, Arizona, Arkansas, Iowa, Kansas, Louisiana, Minnesota, Mississippi, Montana, Nebraska, New Mexico, Ohio, Oklahoma, and Tennessee.

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other similar facilities. Supporters also argued that the classification of property for tax purposes was not discriminatory and imposed no hardship on the pipelines.

On July 8, 1985, the House Committee on the Judiciary reported the bill.148/ The Judiciary Committee recommended enactment of provisions preventing tax discrimination by the States against interstate natural gas transmission property. A comparison of the proposed authorizations is set forth in Table III-4.

148/ House Report 99-121 (Part 3), House Committee on the Judiciary, 99th Cong., 1st Sess. (1985).

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TABLE III-4

Comparison of FY 1986-1987 Authorization Recommendations

(in millions)

	Gas Pipeline Safety		Hazardous Liquid Pipeline Safety		State Grants	
	1986	1987	1986	1987	1986	1987
Senate Commerce	$3.45	$3.615	$.875	$.917	$4.5	$4.716
House Public Works	$3.45	$3.6	$.875	$.912	$5.0	$5.230
House Energy	$3.36	----	$.841	----	$4.5	----
House Judiciary	NA	NA	NA	NA	NA	NA

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SUMMARY

The Federal regulation of natural gas and hazardous liquid pipelines that has evolved from the initial efforts undertaken during the Johnson Administration in 1967 has witnessed extensive congressional oversight, several legislative amendments to the Natural Gas Pipeline Safety Act of 1968, the administrative promulgation of numerous regulations by the Department of Transportation, and a good deal of industry and public attention. In the last several years, Congress has utilized short-term reauthorizations as a way to give closer scrutiny to pipeline safety regulation and program administration.

Nevertheless, after nearly two decades of pipeline safety regulation, very fundamental questions persist about its need, its efficacy, its costs, and its benefits.

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IV. RECURRING ISSUES IN PIPELINE SAFETY*

As the previous chapter described, the debates about the appropriate responsibilities for the pipeline safety program and the adequacy of the funding to meet those responsibilities began with the beginning of the program. In 1968, when the Congress was deciding the final shape of the the Natural Gas Pipeline Safety Act, the Senate version contained authorization levels from five to twenty times as great as those in the House version. The bill that came out of conference contained essentially the lower House authorization levels, which constrained the program's budget from the beginning. The pressures on the program's budget increased in the early 1980s, along with the expansion of the scope of the program and the increased pressure on the Federal budget in general. This chapter discusses issues that have come up repeatedly in attempts to set appropriate budget levels. These issues include:

- o How serious are the risks posed by pipelines?
- o How much should society pay for pipeline safety in view of those risks?
- o What are the appropriate roles of Federal and State governments?
- o Who should pay for increasing the safety of pipelines?

This chapter discusses these issues in the context of the history of pipeline safety.

HOW SERIOUS ARE THE RISKS?

Throughout the period covered by this study, there has been controversy over the dangers of pipelines. The industry has maintained that pipelines are safe, but occasionally major explosions have convinced elements of the public and Congress otherwise. Compared to many other hazardous activities, relatively few people have died from pipelines: on the order of 30 people have died each year in pipeline accidents, as compared to the nearly 50,000 that have died each year in automobile accidents. Several factors, however, increase concerns about the safety of pipelines.

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* Prepared by David W. Cheney, Analyst in Science and Technology, Science Policy Research Division.

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One factor is the ever-present potential for catastrophe. Although multiple-death pipeline accidents are rare, pipeline accidents have the potential to kill tens and even hundreds of people. 1/ In part, because they are rare and frequently dramatic, pipeline accidents sometimes attract national media attention, which heightens the public's concern about their safety.

Another factor is that pipeline accidents are often beyond the control of the people who are at risk. Society generally requires activities that impose risk upon people involuntarily to maintain a higher level of safety than activities that are under the control of the person at risk. 2/ While in some cases pipeline accidents are caused by people who do have some degree of control over the accident, such as pipeline workers or people excavating near the pipeline, in many cases people who have been injured had no control over the accident. These two factors tend to increase the degree of concern over pipeline safety among some people. 3/ The answer to the question of how serious are the risks depends on one's perspective.

HOW MUCH SHOULD SOCIETY PAY FOR PIPELINE SAFETY?

A second closely-related issue has concerned the resources pipeline safety deserves. Because there has been no consensus on how serious a problem pipeline safety is, it is not suprising that there has been no consensus on the level of resources to devote to increasing pipeline safety. One source of disagreement is that there are differences in the perceptions of the costs and benefits of increased safety betweeen the industry and elements of the public. The pipeline industries directly feel the costs of increased pipeline safety, due to increased costs for equipment, inspection, maintenance, and paperwork. The industry also benefits, perhaps less directly, from improved safety through lower insurance and legal costs. The public, on the other hand, directly benefits from increased safety but may only

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1/ A reminder of this potential occurred in Mexico City in November, 1984, when an explosion in a Petroleos Mexicanos facility killed at least 393 people. Orne, William A., Jr. Mexican Blast Stirs Anger, Criticism. Washington Post. Nov. 26, 1984. p. A17-A18.

2/ Starr, Chauncey. Social Benefits Versus Technological Risk: What Is Our Society Willing to Pay for Safety?. Science, vol. 165, Sept. 19, 1969. p. 1232-1238.

3/ It can be noted that the public seems to care less about pipeline safety than it does about activities that have better safety records but are potentially more catastrophic and less under the control of the exposed public, such as nuclear power.

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weakly perceive the costs. Many may believe that the costs of increased safety will be born by the pipeline companies, without perceiving that the costs will ultimately be passed on to consumers. For these reasons, the public may be less sensitive to the cost of increased safety than the industry.

In recent years there have been increased attempts to determine analytically the optimum level of government expenditures through the use of cost-benefit analysis. Several difficulties arise in attempting to use this technique to estimate an optimum level for the pipeline safety program (or other safety programs). Specifically, there are difficulties in:

- o estimating the costs of the program;
- o estimating the benefits of the programs; and
- o putting the costs and the benefits in comparable units (which involves putting a value on lives and injuries).

The principal difficulty in estimating the cost of the program is in estimating the amount that it costs industry. In 1983, the Federal pipeline safety program had a budget of about $8.5 million, and the States spent an additional $5.9 million (beyond the Federal grants to the states). The costs to industry of the Federal program are difficult to estimate; industry continuously invests in safety, and it is difficult to determine how much of this would be spent in the absence of Federal regulations. Some have suggested that the costs to industry could be lowered by rewriting some of the safety regulations as "performance standards" that allow for more innovative and cost-effective means of achieving the same safety goals. 4/

In estimating the benefits of the program, one difficulty is that there were no good estimates of the total number of deaths and injuries caused by pipeline accidents prior to the establishment of the program in 1968. Since the program began, gas pipeline fatalities have declined, although not continuously. During five early years of the program, from 1970 to 1974, an average of 32 people died per year in gas pipeline accidents. 5/ From 1979 to 1983, the five most recent years for which complete information was available, an average

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4/ William Jennings, former director of the DOT's pipeline safety program, personal correspondence, January, 1985.

5/ Statistics from U.S. Department of Transportation. Annual Report on Pipeline Safety: Calendar Year 1979. Washington, D.C., U.S. Department of Transportation. 1981.

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of 23 people died per year in gas pipeline accidents. 6/ Over this time, the total mileage of pipelines was increasing. Judging by these statistics, it appears that there has been a decrease in pipeline accidents as the Federal program developed. It is not certain, however, how much of this decrease should be attributed to the Federal program.

Putting the benefits of increased safety into dollars to compare to the costs is very controversial. There is no consensus on the value of human life or on the ethics of putting a value on it. It appears, however, that, if some of the decrease in pipeline fatalities is due to the Federal program, then probably the costs of reducing fatalities in the pipeline programs are within the range of the costs per life saved in other Federal safety programs. 7/ It should be noted that the cost of saving a life increases as the number of deaths goes down. Because the inspection and maintenance of pipelines involves some degree of worker risk, at some point increasing inspection and maintenance of pipelines will result in an increase in risk to workers greater than the decrease in risk to the public.

WHAT ARE THE APPROPRIATE ROLES OF FEDERAL AND STATE GOVERNMENTS?

In the mid-1980s the Federal/State relationship came under renewed examination. Part of the reason for this is that under the Natural Gas Pipeline Safety Act the Department of Transportation (DOT) has the responsibility to regulate the intrastate pipeline facilities that the states choose not to regulate. This has left the DOT with a disparate mix of pipeline systems to regulate, including interstate pipeline, some intrastate line, some distribution systems, and some 29,000 master meter systems. DOT does not seem to have the resources to inspect all of these systems.

For certain activities there seems to be a consensus or near consensus that there is a Federal role. These activities include:

6/ U.S. Department of Transportation, Annual Report on Pipeline Safety: Calendar Year 1983 (October 1984 draft). p. 10 and 37.

7/ If one makes a rough calculation and assumes that the pipeline safety program has resulted in saving ten lives per year at a cost of $15 million per year, then the program has resulted in saving one life for each $1.5 million spent. While many Federal programs are estimated to save lives for less money, some spend more per each life saved. For example, a proposed Nuclear Regulatory Commission cost-benefit guideline is roughly equivalent to $10 million per life saved. See Spangler, Miller B. An International Perspective on Risk and Equity Issues Associated with the Coal and Nuclear Fuel Options. Journal of Public and International Affairs, vol 5., no. 1, winter 1984. p. 101-121.

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- o setting uniform national standards (both inter- and intrastate) for pipeline safety;
- o performing research necessary to regulate effectively;
- o developing training programs and manuals to promote consistent interpretation of the regulations; and
- o enforcing interstate regulations.

A Federal role in each of these activities can benefit the industry by making the regulations and the interpretation of the regulations more consistent throughout the States. In addition, efficiencies may be achieved by doing these activities singly for the country rather than separately in each State.

In some other areas, the justifications for Federal involvement are less clear. Enforcement of intrastate pipeline regulations are in this category. If increased safety of intrastate pipelines does not benefit people outside of the State, then the justification for Federal involvement is less clear. If a State does not believe that the increased safety--due to stringent enforcement of intrastate pipelines regulations--is worth the cost of enforcement, should the Federal Government determine otherwise?

WHO SHOULD PAY?

A closely related issue has been the issue of who should pay. In general, everyone wants someone else to pay for the pipeline safety program. Particular issues include:

- o the use of "user fees" --charges assessed to the pipeline companies to cover the cost of inspection;
- o the funding of grants to the States to cover up to 50% of their program costs; and
- o charges to the States for the training of State pipeline inspectors.

The issue of user fees dates back to the passage of the 1968 Natural Gas Pipeline Safety Act. The Senate bill contained a provision for user fees, but this provision was deleted in conference. In 1973, a court held that the Act did not preclude the States from assessing user fees (see chapter III, p. 117). The issue of whether DOT could charge user fees was raised again in 1974 (see chapter III, p. 120), and DOT stated that they did not believe that they had the

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authority to assess user fees. The House Energy and Commerce Committee asked the Department to reexamine the issue again in 1985. User fees would shift some of the funding for the program from taxpayers in general to the industry (the creator of the risk) and ultimately to the consumer (the beneficiary of the activity that creates the risk). They would also move part of the cost of the program off the budget. In setting user fees, the DOT would have to determine how much of its cost to recover and how to charge each pipeline company.

For most of the history of the Federal pipeline program, the grants to the States have been one of the most popular parts of the program. In 1971, at the beginning of the program, the Nixon Administration delayed spending some of the grant money while determining how it would fit in with the broader revenue sharing program. In subsequent years, the program enjoyed a great deal of support from the States and from the National Association of Regulatory Utility Commissioners (NARUC). Only in the eighties did the funding for the program drop below the 50% permitted by law. In the mid-80s, as the intrastate hazardous liquids program was established, there were increased demands for funds for State programs.

At issue is the extent to which the Federal Government should pay for the State programs. The argument in favor of full funding of the grant program is that it has been effective in encouraging a great deal of State involvement. The argument against full funding is that taxpayers of the whole country do not necessarily benefit from activities that are within other States.

The issue of whether State and company inspectors who attend the Transportation Safety Institute, for Federal training courses, should have to pay a fee for the course was raised in the 1984 House Energy and Commerce Committee hearings. 8/ The argument for having the Federal Government pay is that it improves the quality of pipeline inspection and promotes uniformity in the interpretation of regulations, benefiting the entire country. The argument against the Federal Government paying is that training of State inspectors is primarily a State responsibility and that, if the courses are worthwhile to the States, the States should be willing to pay to have their inspectors attend.

8/ U.S. Congress. House. Committee on Energy and Commerce. Subcommittee on Fossil and Synthetic Fuels. DOT's Pipeline Safety Program. Hearings, 98th Cong., 2d Sess., on H.R. 3314 and H.R. 5058, bills to amend the Hazardous Liquids Pipeline Safety Act of 1979 and the Natural Gas Pipeline Safety Act of 1968. Mar. 13 and 27, 1984. Washington, U.S. Govt. Print. Off., 1984. p. 73.

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These four issues--the level of the risk, the level of the resources to be expended, the roles of the Federal and State governments, and the final burden of the costs--are the principal recurring issues in the history of Federal pipeline safety regulation. The future of that program may depend on judgments of how well the approaches of the past to these issues have worked out.

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APPENDIX A
"DRAFT REPORT ON NATURAL GAS PIPELINE SAFETY"

by J. H. Inglis
August 1, 1968*

*Administrative History, Federal Power Commission, Vol. I, Part 8. Administrative History Files of the Johnson Administration. Lyndon B. Johnson Library, Austin, Texas. Typescript with manuscript editing. Retyped verbatim, by Congressional Research Service, U.S. Library of Congress, Jan. 1985. Numbers in brackets are the original (author's) page numbers.

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[Lyndon B. Johnson-Administration]
Departmental Histories Project
Draft Report on Natural Gas
Pipeline Safety

The domestic record of the Johnson administration includes an interesting and significant chapter on gas pipeline safety. The nation's effort to protect its citizens against the health and safety hazards of a modern industrial society is a continuing one. But certainly the years 1965 through 1968 will be remembered as the years in which the Federal Government faced up to the serious challenge presented by the unique hazards connected with the transportation and use of natural gas.

Prior to 1965 the Federal role in gas pipeline safety was not significantly emphasized or brought to general public attention. The inherent hazards connected with gas service, however, were well known to safety authorities and to the gas industry. There had been a few spectacular multiple death disasters such as at New London, Texas, in 1937 when 294 pupils and teachers died, in Cleveland in 1944 when 130 persons died in a liquefied natural gas blast, and another in Villa Rica, Georgia, in 1957 when 17 died. There were a number of others over the years resulting in substantial property damage to homes and business structures but only a small number of persons were killed or injured in each instance. In spite of the shock to the locality or individual company that was caused by each of these events, the general public was not aware of a serious gas safety problem as such. Each gas explosion prior to 1965 was treated generally as an isolated tragic event, usually explainable due to special circumstances not likely to recur. It was a problem considered entirely within the purview of the gas industry operating under its own code and a variety of state and local fire and safety codes. The stringency of these codes varied widely between states and localities.

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There were no valid industry-wide national statistics on gas accidents. The casualty and damage totals were often lumped together with fire statistics.

If the general public was only dimly aware of the hazards connected with the local distribution and use of gas, it was almost totally uninformed concerning the safety aspects of long distance natural gas transportation in thin-walled large diameter, high pressure transmission lines. The interstate natural gas transmission network is the newest and fastest growing segment of the gas industry and is within the area of regulatory responsibility of the Federal Power Commission. The hazards in connection with the long distance transmission network are quite different, and more serious in some respects, from those connected with the retail distribution and use of gas. For years the FPC claimed it lacked safety responsibility for the interstate transmission lines (except indirectly in connection with conditioning certificates for new pipeline construction) and in

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reports to Congress over a 12 year period prior to 1965 had recommended that the FPC be given appropriate safety jurisdiction in addition to its other responsibilities under the Natural Gas Act. Legislation for this purpose (H.R. 88 in 82nd Congress and H.R. 134 in 83rd Congress) was introduced by Representative John Heselton in 1951 and 1953 and hearings held in 1954. Congress did not act on these bills, possibly because the general public was apathetic with regard to gas pipeline safety. One response to these efforts by the FPC and in Congress, however, was the preparation and distribution of a revised and expanded voluntary gas industry safety code formulated in the early 1950s, with the cooperation of FPC staff engineers, and periodically revised.

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In the meantime the gas industry was growing at a remarkably fast pace thanks to the new technology making possible the transporting of natural gas long distances through high pressure large diameter pipelines. By 1965 natural gas was supplying more than 30 percent of the nation's energy needs and among its many uses was supplying heat for more than half of all dwelling units in the nation. The nation's network of gas lines by 1965 consisted of more than 200,000 miles of transmission pipeline, 60,000 miles of field and gathering lines, and 490,000 miles of distribution mains. The gas industry was growing much faster than the public's awareness of potential gas hazards. Most people, to the extent that they recognized any gas safety problem at all, tended to put their trust in the industry safety code and local law without fully understanding the scope of these requirements, including some major loopholes. In general, this was the situation with respect to gas safety until 1965.

On the morning of March 4, 1965, a massive rupture occurred on a high pressure transmission line at Natchitoches, Louisiana, killing 17 persons, including nine children. A 14 acre area including six homes was engulfed in fire and completely devastated. This single event, more than anything else, aroused the nation and its leaders to action on gas pipeline safety. Also the Natchitoches failure added a new dimension to the gas safety problem by revealing the special hazards connected with high pressure transmission lines. It was not the first serious accident on a high pressure transmission line, but it was by far the worst.

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The FPC sent a team of investigators to Natchitoches immediately. The Commission sent a preliminary report to Congress on April 15, 1965 and a final report on August 12, 1965 (Docket No. CP65-267). Every facet of the Natchitoches failure was analyzed in depth and the results presented to Congress and the public. The cause of the failure was declared to be "stress corrosion cracking," a type of metal fatigue. The line which ruptured was 24 inch diameter with pipe wall thickness of a quarter inch. A similar failure without loss of life had taken place about a quarter of a mile upstream on the same pipeline ten years previously. The line which ruptured in each case was part of a pipeline installed in 1944 extending more than 1,000 miles from Texas to West Virginia.

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A number of disturbing questions persisted in the wake of the Natchitoches failure and investigation. Why hadn't the industry safety code prevented this failure? How effective were State and local safety codes in preventing such events? At how many other places on the high pressure transmission network was corrosion weakening the thin-walled steel pipe? The FPC obviously needed much more information on which to reach valid conclusions on the full scope of the pipeline safety problem.

Under the leadership of former Chairman Joseph C. Swidler, the FPC moved during the summer of 1965 to restudy the entire problem of pipeline safety and to reinforce its previous recommendations to Congress for legislation establishing federal safety standards. Commissioner Carl E. Bagge, President Johnson's first appointee to the Commission, was one of the most outspoken advocates for a strong safety program.

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In addition to publishing the Natchitoches report, the Commission during this period:

1. Undertook, at the request of the Senate Commerce Committee, a questionnaire to all FPC regulated pipeline companies to gather information on pipeline failures and safety programs covering a 15 and a half year period from January 1, 1950 to June 30, 1965.

2. Initiated a rule making proceeding under which pipeline companies would be required to file prompt reports on all significant pipeline failures. The new reporting requirements were adopted and made effective starting November 1, 1966 (Order No. 327 issued September 8, 1966). Prior to the adoption of this rule the companies had been required to report only failures which resulted in service interruptions

3. Adopted a new rule under which maximum safe operating pressure was specified in each FPC certificate authorizing the construction of initial and expanded pipelines. (Order No. 324 issued June 30, 1966.)

4. The Commission staff undertook a thorough review of the industry safety code written under the sponsorship of the American Society of Mechanical Engineers and then titled, "American Standard Code for Pressure Piping, Gas Transmission and Distribution Systems - ASA B31.8" (since changed to USASI B31.8). Revisions of the code were drafted by FPC staff engineers to eliminate the optional and permissive features and strengthen the code generally. These revisions were submitted to the code committee and to a committee of staff experts of the National Association of Regulatory Utility

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Commissioners (NARUC). FPC representatives have continued to work with both groups to bring about improvements in the industry code and in the State safety laws and regulations which are primarily based upon the industry code.

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These steps were all taken within the framework of the Natural Gas Act as it then existed and with the full realization by the Commission that a comprehensive solution of the safety problem would undoubtedly entail legislation assigning gas pipeline safety responsibility to a Federal agency and providing for the establishment of Federal safety standards. In numerous speeches to industry groups and others during this period the individual Commissioners reiterated Commission concern for strengthening gas pipeline safety requirements at both the state and Federal level.

The FPC report on pipeline safety resulting from the questionnaire to pipeline companies was published by the Senate Commerce Committee on April 19, 1966. 1/ The Committee had under consideration an FPC sponsored bill (S. 1553) which gave pipeline safety jurisdiction to the FPC and was concerned only with interstate natural gas transmission lines. The Commission reported on the basis of its questionnaire results that a total of 64 persons had been killed and 225 injured as a result of transmission system failures during the 15 and a half year period of the survey and that during the same period there had been a total of 2,582 failures, including 1,268 operating pipeline failures, 143 compressor station and other facilities failures, and 1,171 pipeline field testing failures. The report

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provided detailed information on the causes of the failures, the safety programs of the reporting companies, the extent of State regulation, the effectiveness of the industry code and such special problems as the hazards of earth moving equipment, corrosion, deterioration of older pipelines, and the effect of population movements on construction standards. This landmark Commission report provided a factual foundation for public discussion of the issue and subsequent Congressional consideration of various gas pipeline safety measures.

The natural gas safety story during the years 1965 through 1968 can be fairly portrayed only against the background of actions and nonactions by Congress, the FPC and the gas industry during the preceding 13 years, from 1951 to 1954. These were years of inaction for the most part as will be seen from a review of FPC memoranda and correspondence and minutes of the industry code committees.

In 1951 Commissioner Buchanan asked the FPC's Office of General Counsel, among other things, whether the FPC had authority to attach safety conditions to certificates for new pipeline construction. In a six page memorandum written by FPC attorneys Sherman S. Poland and Harry R. Van Cleve, Jr., the answer came back, "probably no." This memorandum was supported by five successive General Counsels and formed the basis for the FPC's official position on pipeline safety for more than 13 years. The "probably no" became "yes" in an August 9, 1965 memorandum by Assistant General Counsel David J. Bardin, affirmed

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1/ A supplemental report was sent by the Commission to the Senate Commerce Committee on May 19, 1966.

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by General Counsel Richard A. Solomon. During the 13 years that the "probably no" went unresolved, the FPC issued certificate orders without safety conditions authorizing more than $8.6 billion of pipeline facilities including over 79 thousand miles of transmission line. In 1965 Commissioner Bagge insisted that the Office of General Counsel

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take a new look at the FPC's safety authority under existing law. Since June 30, 1966, the Commission has included a safety requirement (limit on maximum operating pressures) in its pipeline certificate orders (previously mentioned Order No. 324).

Although the Commission at that time believed it had authority to attach the safety conditions to certificates for new pipeline construction, it did not believe it had authority to promulgate general safety regulations for pipe in the ground and continued to ask Congress for the necessary authority.

Those who search this record may find a number of typical symptoms of government non-action: Congress unwilling to act on a problem which had not yet reached page one dimensions; general confusion as to whether responsibility rests at the Federal or State level; the FPC in the comfortable position of disclaiming authority to attack the problem and at the same time routinely asking Congress to give it such authority; and the pipeline companies each going their own separate ways on pipeline safety while an industry code committee pursued generalized non-enforceable safety objectives at a fairly leisurely pace. Everyone involved was in a reasonably defensible posture while action on a serious national problem was stalled on dead center some place between FPC and the Congress.

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A major realignment of Federal transportation functions was in process by the time the Senate Commerce Committee turned its attention to pipeline safety in late August of 1966. In his message to Congress on Transportation and Traffic Safety on March 2, 1966, President Johnson had recommended that a Department of Transportation be established and that it be assigned the responsibility to "improve safety in every means of transporation." FPC Chairman Lee White, who had been named by President Johnson to succeed former Chairman Swidler, appeared before the committee in support of S. 1553 which would have made the FPC responsible for safety regulation of the interstate transmission lines only. Chairman White suggested to the Committee, however, that the proposed new transportation agency might be the appropriate agency for the gas pipeline safety assignment in view of its other similar safety responsibilities.

A number of other witnesses appeared in support of safety legislation, including land owners who had been directly affected by liquid petroleum and gas pipeline construction, labor leaders, and independent engineering consultants. Opposition was expressed by

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state officials representing NARUC who contended that the gas industry safety record was good and that the state utility commissions

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and other local officials operating under state law could provide adequate protection against gas hazards, if they were not already doing so. During his testimony Chairman White dealt in great detail with the weaknesses of the industry code, the gaps in State and local safety requirements and the hazards which had been revealed by the FPC pipeline safety survey and the Commission's investigations of specific major failures such as the one at Natchitoches. Later in 1966 Congress approved the President's proposal for a Department of Transportation and the Senate Commerce Committee deferred its consideration of gas pipeline safety until the following year.

As Congress was returning to work in January, 1967 another spectacular gas failure - this time in the Queens (Jamaica) section of New York City reasserted, in bold headlines, the need for new gas pipeline safety requirements. The failure of a drip pot on a medium pressure distribution main had released a torrent of highly inflammable gas in the early morning hours into a crowded city area and touched off a five alarm fire which partially or totally destroyed 14 buildings, injured seven persons, and at its height engaged more than 400 firefighters. The shock effect of this event was almost as severe as the Natchitoches failure even though the police were able to prevent loss of life by evacuating the affected area just minutes before the accumulated gas cloud had ignited. There were several lessons for Congress in the Queens fire. It had occurred in the distri-

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bution system of one of the nation's larger gas distribution companies. It had occurred in one of the very few States which had on its books a strong gas safety code - stronger in many respects than the voluntary industry code. After the gas safety efforts of the FPC in Congress over the previous two years and another major gas failure, the stage was set for a final all-out drive to enact a Federal gas pipeline safety program.

President Johnson addressed himself to the pipeline safety problem in his Consumer Protection Message to Congress on February 16, 1967. He asked for the enactment of the "Natural Gas Pipeline Safety Act of 1967" which would authorize the Secretary of the newly created Department of Transportation to develop pipeline safety standards and enforcement measures in cooperation with the States covering all segments of the gas industry including gathering, transmission and distribution, both interstate and intrastate.

In his message the President said:

> The safe transmission and distribution of natural gas is essential to all of us. The natural gas industry is among the most safety conscious in the Nation. But natural gas is inherently dangerous when it is being transmitted. It travels through pipelines

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at enormous pressures. It is highly flammable. When it burns it can reach tempera-

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tures as high as 2,500°F. In March 1965, a tragic pipeline failure near Natchitoches, Louisiana, killed 17 persons. The recent blaze in Jamaica, New York, dramatically underscored how serious a gas pipeline failure can be.

As pipelines age and as more and more of the system lies under areas of high population density, the hazards of pipeline failures--and explosions--increase. Yet--Twenty-two States have no safety regulations.

Many of the remaining 28 States have weak or outmoded provisions.
Although the gas industry has developed safety standards, they are not binding and in some instances not adequate.
There is no Federal jurisdiction whatsoever over 80 percent of the Nation's gas pipeline mileage and no clear authority to set minimum safety standards for the remaining 20 percent.

With the creation of the Department of Transportation, one agency now has responsibility for Federal safety regulation of air, water, and land transportation, and oil pipelines. It is time to complete this comprehensive system of safety by giving the Secretary of Transportation authority to prescribe minimum safety standards for the movement of natural gas by pipeline.

[-13-]

. . . If we act now--in the public interest--we can reduce significantly the possibility of tragedy later on.

The President's recommendations were introduced in the Senate as S. 1166 and hearings commenced before the Senate Commerce Committee on April 19, 1967.

In addition to Secretary Alan S. Boyd of the Department of Transportation and FPC Chairman White, the witnesses included gas company executives, State officials, pipeline research scientists, gas company workers and labor leaders, independent engineering authorities, safety experts and ordinary citizens who were simply worried about the proximity of gas lines to their homes. During five days of hearings 21

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witnesses testified and underwent extensive and probing questions by the Senators. A complete and searching analysis of the entire gas safety problem emerged from the record.

Secretary Boyd and Chairman White reviewed the record of gas pipeline accidents, described the hazards, weighed the existing codes and safeguards and urged the enactment of the Administration program. Secretary Boyd listed four other major gas accidents that had occurred during the early months of 1967 in addition to the fire in Jamaica, Queens, New York City.

The case against Federal gas safety regulation was presented by gas company officials and State regulatory officials. They contended that (1) the gas industry had a good safety record, (2) the States either were doing an adequate job of enforcing safety standards, or at least could if given a little more time, and (3) that the voluntary industry code had served the industry and public well and would continue to do so.

These assertions were seriously eroded in later testimony. The independent engineering authorities described in detail the gaps in the industry code and the slow moving, industry-oriented procedures of the industry code committees. Gas company maintenance workers gave their own first hand accounts of the leakage and deterioration which they encountered on some of the older distribution mains. The "good safety record" of the industry was unclear after a critical examination of the accident statistics and the way in which they were being compared and presented. No one, however, disputed the fact that most gas companies have seriously pursued safety goals, if only as a matter of self interest.

One serious point of contention was whether or not the States were actually able to provide adequate safety regulation. After it was shown at the August 1966 hearings that only 27 States prescribed gas safety requirements by statute or rules, the NARUC undertook a campaign to secure the adoption of gas safety requirements by the remaining 23 states. A year later the NARUC spokesman was able to announce to the Senate committee that the number of States with gas safety requirements had been increased to 47. At first glance this appeared to be a substantial accomplishment. However, rebuttal testimony by the Department of Transportation revealed that in most of these 47 states safety regulation was largely on paper and lacked the muscle of money and manpower resources for enforcement. It was also made clear that since nearly all of the State gas safety laws and regulations were patterned on the voluntary industry code, they suffered the same deficiencies which had been shown in the industry code.

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The Administration bill (S. 1166) was favorably reported by the committee and adopted by the full Senate on November 9, 1967, by a vote of 78 to 0. A few concessions had been made by the committee, the elimination of gathering lines from safety regulation being the most important. However, this change was reversed in the final

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debate by the full Senate and the measure was restored substantially to the form recommended by the President at the time of its introduction. The strengthening amendment sponsored by Senator Frank J. Lausche of Ohio was approved by a vote of 37 to 32.

The essential provisions of S. 1166 were:

1. Authority for the Secretary of Transportation to prescribe gas pipeline safety standards covering design, installation, inspection, testing, construction, operation and maintenance of all gas pipelines including those used for gathering, transmission and distribution, both interstate and intrastate. To advise in the establishment of standards, the Secretary would name a "Technical Pipeline Standards Safety Committee" consisting of technical experts broadly representative of independent research and engineering bodies, the general public and government agencies as well as the gas industry. Interim standards, based largely on existing state standards, would be issued within three months of the effective date of the act and permanent standards would be issued within two years.

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2. Provisions enabling the states to participate in the pipeline safety program. The Secretary of Transportation would be authorized to exempt from Federal regulation gas pipeline facilities (except the interstate transmission lines subject to FPC jurisdiction) in any state which entered into an agreement with DOT under which the state would adopt and enforce safety standards equal to or exceeding the Federal standards and would cary out the enforcement of such standards under a plan approved by the Secretary of Transportation and subject to monitoring by DOT. Other states, which were unable or did not wish to assume full pipeline safety jurisdiction, could participate by assuming inspection, record keeping and some compliance activities for the Secretary of Transportation. The Secretary would be authorized to make grants to the states of up to 50 percent of the cost of inspection and compliance.

3. Authorize the Secretary of Transportation to carry out research on materials, operations, devices or processes intended to improve pipeline safety.

4. Penalties, court appeals, reporting and record keeping by gas companies and DOT cooperation with FPC.

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The House Committee on Interstate and Foreign Commerce conducted hearings and considered the Senate-passed Administration bill during the early months of 1968. The committee revision of the bill as reported to the full House on May 3, 1968, largely reflected the complaints of the gas industry witnesses who had appeared before the committee. The revised bill would still direct the Secretary of Transportation to establish safety standards for the gas industry, but the implementatio of those standards would be weakened in the following major respects:

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1. Distribution and intrastate transmission facilities would come under state safety regulation, rather than Federal safety regulation, in any state in which the appropriate authorities certified to the Department of Transportation that the State was enforcing safety standards equal to or exceeding the Federal safety standards. Unlike the Senate passed bill, there were no provisions permitting the Secretary of Transportation to monitor state enforcement activities or otherwise assure himself that the State standards were adequate and actually being enforced and violators punished.

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2. Gas pipelines already in the ground would be exempted from the new Federal safety standards unless the Secretary of Transportation made a specific finding that an actual hazard existed with respect to a particular gas system facility. The proponents of the Senate bill pointed out that the powers of the Secretary would be meaningless under this revision since in most instances it is impossible to identify a particular hazardous facility unless and until an actual gas failure occurs.

3. Gathering lines, except those located in urban areas, were eliminated from safety jurisdiction.

4. The appropriation for carrying out the safety program was drastically reduced. The reduction of the first year's allocation, for example, was cut from $13 to $2 million.

5. Penalties for violations of the safety regulations were reduced.

The revised measure was a severe disappointment to the friends of the original Administration bill. Secretary Boyd described the revised bill as "worse than an empty gesture." Representative John E. Moss of California and three other House members issued a statement calling the revision "emasculated and dangerously ineffective."

"It is better to have no bill than one that merely lulls the public into a false sense of security," Representative Moss said.

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President Johnson issued a statement from the White House on June 27, 1968, reiterating the need for effective gas pipeline safety legislation and calling upon the full membership of the House to reinstate the deleted provisions of the Senate bill.

The House considered the measure on July 2, 1968, and after lengthy debate voted down all proposed amendments from the floor and approved the weakened House Commerce Committee version by a vote of 301 to 14 with 67 members not voting.

House and Senate conferees went to work on the two sharply different versions and within three weeks arrived at a compromise which resembled the House version in most major respects. The House conferees did agree to an increase in the penalties, a modest increase in the third year appropriation for DOT and a change in the certification

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section which would shift the burden of proof from the Secretary of Transportation to the State agency in cases where DOT alleged non-compliance with safety standards. The compromise was promptly approved by both houses of Congress and signed by the President on August 12, 1968.

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Gas pipeline safety is only one strand in a much larger design being wrought today to preserve man's total environment and insure that he is the master, rather than the victim, of industrial growth and technological progress. It is part of the same national response that is working for clean air and water, safer highways and airways, and the elimination of health hazards, noise, ugliness, congestion and consumer frauds. The role of government in all such efforts has been fact-finding, coordination and leadership. Results have depended upon enlisting the best efforts of many individuals and agencies as well as the business community. The accomplishments in gas pipeline safety during the past four years are worth recounting as a significant and typical segment of the total Administration effort to enhance the environment and enrich the lives of all citizens.

RESUME OF B31.8 CODE COMMITTEE ACTIVITIES

Commencing in 1952 the natural gas industry together with related supplier industries and a small representation of governmental personnel embarked upon a comprehensive crash program to develop a safety code for gas transmission and distribution piping systems.

The organizational meeting which led to the creation of Subcommittee 8 of the American Standards B-31 Code Committee for Pressure Piping was held on May 14, 1952 at which time the stated objective of the subcommittee was to; "review and enlarge, if necessary, the existing portion of Section 2 of the pressure Piping Code B-31 relative to gas distribution and transmission systems with the overall objective of providing safety requirements that will satisfy governmental bodies".

As a first step a code designated B31.8 was issued in 1952. This consisted of a reorganization of the material in the Composite B-31 document and did not constitute a comprehensive code for gas distribution and transmission piping systems.

Meetings were held in June, August, September, October and December 1952 at various locations throughout the United States which resulted in the development of an outline of the proposed code.

During 1953 and 1954 a series of drafts of a proposed code were prepared and balloted upon by the members of the subcommittee. One meeting of the group was held in 1953 and two in 1954. As a result of these meetings and balloting, the first comprehensive code for gas distribution and transmission piping systems was issued as B31.8-1955.

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Subsequent to the issuance of the code in 1955, the Committee sharply reduced its activity and met only on an annual basis. Revisions of the code were balloted and issued in 1958 and 1963 and supplements to the 1963 edition were issued in 1964 and 1965. The principle source of suggested changes to the code were inquiries, from companies using the code, concerning intent and requests for interpretation. Changes in the various standards and specifications referenced in the code also necessitated corresponding code changes. [-2-]

It is of interest to note that during this period after the first comprehensive code was issued only 27 states saw fit to adapt the code as a state standard and 21 of these states supplemented the code in their regulations. During this period the Federal Power Commission annually sponsored legislation which would have placed interstate pipeline lines under the safety jurisdiction of the FPC. In 1954 the NARUC officially endorsed Federal safety regulation and sponsored testimony in favor of such legislation.

Following is a tabulation of the location and duration of the several annual meetings of the Section 8 Committee from 1956 to 1965:

Year	Location	Duration
1956	White Sulphur Springs, W. Va.	1 day
1957	Cleveland, Ohio	1 day
1958	White Sulphur Springs, W. Va.	2 days
1959	Phoenix, Arizona	2 days
1960	San Francisco, California	2 days
1961	Williamsburg, Virginia	2 days
1962	New Orleans, Louisiana	2 days
1963	Sea Island, Georgia	2 days
1964	Santa Fe, New Mexico	2 days
1965	Chicago, Illinois	2 days

The code as originally approved and subsequently revised through 1963 was an adequate guide to minimum standards and was a vast improvement over previous codes insofar as they applied to gas transmission and distribution piping systems. However, it left a great deal to be desired as a viable safety code that could be administered as a governmental regulation. Rather than establishing minimum requirements that represented the best thinking of the best engineers in the industry it resorted to compromises on many of the basic requirements so as to achieve a consensus vote. The use of language such as "it is recommended that", "where appropriate" and "should" was quite common in the code thus permitting individual situations to be met by alternate means without specifically violating the minimum code requirements.

The permissive nature of the code is illustrated by the requirements of Section 811. Whereas Section 811.221 requires a petition to the code committee for authorization to use materials not approved

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by the code, Section 811.222 permits the use of materials . . . "conforming to specifications which do not vary materially from a listed specification . . . ."

It is my understanding that section 811.222 was added to the code to satisfy certain members of the committee who wished to be free to use a grade of pipe for which the American Petroleum Institute would not issue a specification although it did not vary materially from previously approved specifications.

Commencing in 1965 and continuing through 1968 the code committee resumed its intensive efforts to develop a code that would be acceptable to governmental bodies. The principle impetus for this accelerated activity was the fact that the Senate Commerce Committee instituted hearings primarily because of an explosion in Natchitoches, Louisiana which resulted in 17 deaths.

An accident report questionnaire compiled by the FPC at the request of the Senate Commerce Committee revealed that most of the accidents could be identified with provisions of the code which could be strengthened. These included protection from damage by others, corrosion and testing requirements.

The FPC staff representative on the Committee proposed a number of revisions intended to strengthen the Code in these and other areas.

In 1965 the NARUC changed its position with respect to Federal safety legislation and embarked on a program of encouraging all states to adopt safety regulations. This program resulted in a total of 47 states adopting gas safety regulations in one form or another by 1968. By far the majority of states adopted the B31.8 Code as a basis for their regulations. The NARUC Gas Committee prepared a "model code" for transmission pipe lines which consisted of suggested modifications to the B31.8 Code. It was recommended by the NARUC that states adopting the B31.8 Code also adopt the "model code". To date no state has adopted the "model code" although the B31.8 code committee has adopted a number of the changes suggested therein. A large number of the changes adopted by B31.8 from the "model code" were identical to those previously suggested by the FPC staff.

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The NARUC Gas Committee is currently developing suggested modifications to the B31.8 Code dealing with the code requirements for distribution facilities.

The B31.8 Code has been extensively modified and strengthened as a result of the work done by the Committee during the past three years. Retroactive provisions to apply to existing facilities have been included in the testing requirements, most of the permissive provisions have been made mandatory and active study is being given to several other important areas. Task forces are working on revisions of the cover and marking requirements, corrosion control and hydrostatic testing and also welding requirements.

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APPENDIX B
OUTLINE OF SELECTED PUBLIC LAWS AND COMMITTEE REPORTS RELATING TO PIPELINE SAFETY*

I. Transportation of Explosives Act of 1921.

- A. Public Law 400, 41 Stat. 1444 (1921).
- B. Congressional Reports
  1. House reported without amendment, See 60 Congressional Record, Part 3, 2182, 66th Congress, 3d Session (1921).
  2. No Senate Report.
  3. No Conference Report.

II. Amendments of 1960 to the U. S. Code, Title 18, Chapter 39, "Explosives and Combustibles", [Amendments to Transportation of Explosvies Act of 1921].

- A. Public Law 86-710, 74 Stat. 808 (1960).
- B. Congressional Reports.
  1. Senate Report No. 901, Senate Committee on Interstate and Foreign Commerce, 86th Congress, 1st Session (1959).
  2. House Report No. 1975, House Committee on the Judiciary, 86th Congress, 2d Session (1960).
  3. No Conference Report.

III. 1965 Amendment to the Transportation of Explosives Act.

- A. Public Law 89-95, 79 Stat. 285 (1965).
- B. Congressional Reports.
  1. House Report No. 588, House Committee on Interstate and Foreign Commerce, 89th Congress, 1st Session (1965).
  2. Senate Report No. 429, Senate Committee on Interstate and Foreign Commerce, 89th Congress, 1st Session (1965).
  3. No Conference Report.

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* This Appendix was prepared by Robert D. Poling, Specialist in American Public Law, American Law Division.

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IV. The Natural Gas Pipeline Safety Act of 1968.

A. Public Law 90-481. 82 Stat. 720 (1968).
B. Congressional Reports.

1. Senate Report No. 733, Senate Committee on Commerce, 90th Congress, 1st Session (1967).
2. House Report No. 1390, House Committee on Interstate and Foreign Commerce, 90th Congress, 2d Session (1968).
3. House Report No. 1795 (Conference Report), 90th Congress, 2d Session (1968).

V. 1972 Amendments to the Natural Gas Pipeline Safety Act.

A. Public Law 92-401, 86 Stat. 616 (1972).
B. Congressional Reports.

1. Senate Report No. 92-829, Senate Committee on Commerce, 92d Congress, 2d Session (1972).
2. House Report No. 92-257, House Committee on Interstate and Foreign Commerce, 92d Congress, 1st Session (1972).
3. House Report No. 92-1322 (Conference Report), 92d Congress, 2d Session (1972).

VI. 1974 Amendments to the Natural Gas Pipeline Safety Act.

A. Public Law 93-403, 88 Stat. 802 (1974).
B. Congressional Reports.

1. House Report No. 93-1296, House Committee on Interstate and Foreign Commerce, 93d Congress, 2d Session (1974).
2. No Senate Report.
3. No Conference Report.

VII. Natural Gas Pipeline Safety Act Amendments of 1976.

A. Public Law 94-477, 90 Stat. 2073 (1976).
B. Congressional Reports.

1. Senate Report No. 94-852, Senate Committee on Commerce, 94th Congress, 2d Session (1976).
2. House Report No. 94-1050, House Committee on Interstate and Foreign Commerce, 94th Congress, 2d Session (1976).
3. House Report No. 94-1660 (Conference Report), 94th Congress, 2d Session (1976).

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VIII. The Pipeline Safety Act of 1979.

A. Public Law 96-129, 93 Stat. 989 (1979).
B. Congressional Reports.

1. Senate Report No. 96-182, Senate Committee on Commerce, Science, and Transportation, 96th Congress, 1st Session (1979).
2. House Report No. 96-201 (Part 1), House Committee on Interstate and Foreign Commerce, 96th Congress, 1st Session (1979).
3. House Report No. 96-201 (Part 2), House Committee on Public Works and Transportation, 96th Congress, 1st Session (1979).
4. No Conference Report.

IX. 1983 Pipeline Safety Authorizations.

A. Public Law 97-468, 96 Stat. 2543 (1983).
B. Congressional Reports.

1. House Report 97-89 (Part 1), House Committee on Public Works and Transportation, 97th Congress, 1st Session (1981).
2. House Report 97-89 (Part 2), House Committee on Energy and Commerce, 97th Congress, 1st Session (1981).
3. Senate Report 97-74, Senate Committee on Commerce, Science, and Transportation, 97th Congress, 1st Session (1981).
4. No Conference Report.

X. 1984 Pipeline Safety Amendments.

A. Public Law 98-464, 98 Stat. 1821 (1984).
B. Congressional Reports.

1. House Report 98-780 (Part 1), House Committee on Public Works and Transportation, 98th Congress, 2d Session (1984).
2. House Report 98-780 (Part 2), House Committee on Energy and Commerce, 98th Congress, 2d Session (1984).
3. No Conference Report.

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XI. Major Pending Legislation.

A. House of Representatives.

1. H.R. 2092, 99th Congress, 1st Session (1985).
2. House Reports.

a. House Report 99-121 (Part 1), House Committee on Public Works and Transportation, 99th Congress, 1st Session (1985).
b. House Report 99-121 (Part 2), House Committee on Energy and Commerce, 99th Congress, 1st Session (1985).
c. House Report 99-121 (Part 3), House Committee on the Judiciary, 99th Congress, 1st Session (1985).

B. Senate.

1. S. 813, 99th Congress, 1st Session (1985).
2. Senate Report.

Senate Report 99-28, Senate Committee on Commerce, Science, and Transportation, 99th Congress, 1st Session (1985).

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APPENDIX C
CONGRESSIONAL HEARINGS
RELATING TO PIPELINE SAFETY*

U. S. Congress. Senate. Committee on Commerce. Safety Regulation by ICC of Interstate Pipelines. Hearing, 89th Congress, 1st session, on S. 1021, to amend Title 18, Chapter 39, of the United States Code, entitled "Explosives and Combustibles." June 3, 1965. Washington, U. S. Govt. Print. Off., 1965.

U. S. Congress. Senate. Committee on Commerce. Safety of Interstate Natural Gas Pipelines. Hearings, 89th Congress, 2d session, on S. 1553, a bill to amend the Natural Gas Act to authorize the Federal Power Commission to prescribe safety requirements for natural gas companies. Aug. 29 and 31, 1966. Washington, U. S. Govt. Print. Off., 1966.

U. S. Congress. Senate. Committee on Commerce. Natural Gas Pipeline Safety Regulations. Hearings, 90th Congress, 1st session, on S. 1166, a bill to authorize the Secretary of Transportation to prescribe safety regulations for the transportation of natural gas by pipeline. ... Apr. 19, 20; Aug. 1, 2, and 3, 1967. Washington, U. S. Govt. Print. Off., 1967.

U. S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Communications and Power. Natural Gas Pipeline Safety. Hearings, 90th Congress, 1st and 2d sessions, on H.R. 6551, S. 1166, bills to prescribe safety standards for the transportation of natural gas by pipeline. . . . Dec. 6, 1967; Feb. 27, 28, 29, and Mar. 1, 1968. Washington, U. S. Govt. Print. Off., 1968.

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* This Appendix was prepared by Robert D. Poling, Specialist in American Public Law, American Law Division, and David W. Cheney, Analyst in Science and Technology, Science Policy Research Division.

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U. S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Communications and Power. Pipeline Safety--1969. Hearing, 91st Congress, 1st session, on the matter of safety of gas and liquid pipelines. Mar. 5, 1969. Washington, U.S. Govt. Print. Off., 1969.

U. S. Congress. Senate. Committee on Commerce. Subcommittee on Surface Transportation. Gas Pipeline Safety Oversight. Hearing, 91st Congress, 1st session, on Department of Transportation Progress in Implementing Natural Gas Safety Act of 1968. July 9, 1969. Washington, U. S. Govt. Print. Off., 1969.

U. S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Communications and Power. Natural Gas Pipeline Safety Act Amendments. Hearing, 92d Congress, 1st session, on H.R. 5065. Mar. 9, 1971. Washington, U.S. Govt. Print. Off., 1971.

U. S. Congress. Senate. Committee on Commerce. Subcommittee on Surface Transportation. Natural Gas Pipeline Safety. Hearing, 92d Congress, 1st session, on S. 980, S. 1910, and H.R. 5065. Nov. 9, 1971. Washington, U. S. Govt. Print. Off., 1971.

U. S. Congress. House. Committee on Interstate and Foreign Commerce. Special Subcommittee on Investigations. Staten Island Explosion: Safety Issues Concerning LNG Storage Facilities. Hearings, 93rd Congress, 1st session, on legislative issues relating to the safety of storing liquefied natural gas. July 10, 11, and 12, 1973. Washington, U. S. Govt. Print. Off., 1973.

U. S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Communications and Power. Natural Gas Pipeline Safety Act of 1968 Amendments. Hearing, 93d Congress, 2d session, on H.R. 15205, a bill to amend the Natural Gas Pipeline Safety Act of 1968 to authorize additional appropriations. . . . June 13, 1974. Washington, U. S. Govt. Print. Off., 1974.

U. S. Congress. Senate. Committee on Commerce. Subcommittee on Surface Transportation. Natural Gas Pipeline Safety Act Amendments of 1975. Hearings, 94th Congress, 1st session, on S. 2042, to amend and strengthen the Natural Gas Pipeline Safety Act of 1968, and to authorize additional appropriations therefore; S. 2183, to amend the Natural Gas Pipeline Safety Act of 1968 as amended, to authorize additional appropriations, and for other purposes. Sept. 25 and 26, 1975. Washington, U.S. Government Print. Off., 1975.

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U. S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Energy and Power. Natural Gas Pipeline Safety Act Authorizations. Hearing, 94th Congress, 2d session, on H.R. 12168 and H.R. 12242, bills to amend the Natural Gas Pipeline Safety Act of 1968 to authorize additional appropriations. . . . Mar. 12, 1976. Washington, U. S. Govt. Print. Off., 1976.

U. S. Congress. House. Committee on Interstate and Foreign Commerce. Subcommittee on Energy and Power. LNG Facility and Pipeline Safety. Hearings, 95th Congress, 2d session, on H.R. 6844, H.R. 11586, and H.R. 11622, bills to provide for the safe operation of pipelines transporting natural gas, petroleum, petroleum products, and certain other materials; to provide standards with respect to the siting, construction and operation of liquefied natural gas and liquid petroleum gas facilities; and for other purposes. Feb. 20, 21, 22; Mar. 20 21, 22; and Apr. 7, 13, 14, 1978. Washington, U. S. Govt. Print. Off., 1978.

U. S. Congress. Senate. Committee on Commerce, Science, and Transportation. Subcommittee for Consumers. Authorizations for the Natural Gas Pipeline Safety Act. Hearing, 95th Congress, 2d session, on S. 1895, to amend the Natural Gas Pipeline Safety Act of 1968 to authorize appropriations for fiscal year 1979. Feb. 27, 1978. Washington, U. S. Govt. Print. Off., 1978.

U. S. Congress. Senate. Committee on Commerce, Science, and Transportation. Pipeline Safety Act of 1979. Hearings, 96th Congress, 1st session, to improve the protections afforded the public against risks associated with the transportation of hazardous commodities by pipeline. Feb. 8, Apr. 25 and 26, 1979. Washington, U. S. Govt. Print. Off., 1979.

U. S. Congress. House. Committee on Public Works and Transportation. Subcommittee on Surface Transportation. Pipeline Safety Act of 1979. Hearings, 96th Congress, 1st session, on H.R. 2207: to improve the protections afforded against [hazards] associated with the transportation of hazardous commodities by pipeline, and H.R. 51: to amend the Natural Gas Pipeline Safety Act of 1968 to provide for the safe operation of pipelines transporting natural gas and liquefied petroleum gas, to provide standards with respect to the siting, construction, and operation of liquefied natural gas facilities, and for other purposes. May 1, and, June 8, 1979. Washington, U. S. Govt. Print. Off., 1979.

U. S. Congress. House. Committee on Public Works and Transportation. Subcommittee on Surface Transportation. Pipeline Safety. Hearing, 97th Congress, 1st session,. Apr. 7, 1981. Washington, U. S. Govt. Print. Off., 1981.

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U. S. Congress. Senate. Committee on Commerce, Science and Transportation. Subcommittee on Surface Transportation. Hazardous Materials Transportation Act, Natural Gas Pipeline Safety Act, and Hazardous Liquid Pipeline Safety Act Authorization. Hearings, 97th Congress, 1st session, on S. 960. Apr. 28, 1981. Washington, U. S. Govt. Print. Off., 1981.

U. S. Congress. House. Committee on Energy and Commerce. Subcommittee on Fossil and Synthetic Fuels. DOT's Pipeline Safety Program. Hearings, 98th Congress, 2d session, on H.R. 3314 and H.R. 5058, bills to amend the Hazardous Liquid Pipeline Safety Act of 1979 and the Natural Gas Pipeline Safety Act of 1968. Mar. 13 and 27, 1984. Washington, U. S. Govt. Print. Off., 1984.

U. S. Congress. House. Committee on Public Works and Transportation. Subcommittee on Surface Transportation. Authorizations for the Natural Gas Pipeline Safety Act of 1968; the Hazardous Liquid Pipeline Safety Act of 1979; and the Hazardous Materials Transportation Act of 1974. Hearing, 98th Congress, 2d session. Mar. 21, 1984. Washington, U. S. Govt. Print. Off., 1984.

U. S. Congress. Senate. Committee on Commerce, Science, and Transportation. Subcommittee on Surface Transportation. Reauthorizations for Hazardous Materials Transportation and Pipeline Safety. Hearing, 98th Congress, 2d session. Apr. 24, 1984. Washington, U. S. Govt. Print. Off., 1984.

U. S. Congress. Senate. Committee on Commerce, Science, and Transportation. Hearing, 99th Congress, 1st session. Mar. 28, 1985. [Not yet printed.]

U. S. Congress. House. Committee on Energy and Commerce. Subcommittee on Fossil and Synthetic Fuels. Hearing, 99th Congress, 1st session. Apr. 16, 1985. [Not yet printed.]

U. S. Congress. House. Committee on Public Works and Transportation. Hearing, 99th Congress, 1st session. Apr. 30, 1985. [Not yet printed.]

U. S. Congress. House. Committee on the Judiciary. Subcommittee on Monopolies and Commercial Law. Hearing, 99th Congress, 1st session. June 12, 1985. [Not yet printed.]

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APPENDIX D
CHRONOLOGY OF SELECTED PIPELINE SAFETY REGULATIONS*

1) 32 Federal Register 1098 (Jan. 31, 1967)

49 C.F.R. Part 80--Explosives and Other Dangerous Articles--Pipeline Transportation

2) 32 Federal Register 16040 (Nov. 22, 1967)

49 C.F.R. Part 180--Carriers by Pipeline

3) 33 Federal Register 16500 (Nov. 13, 1968)

49 C.F.R. Part 190--Interim Minimum Federal Safety Standards For the Transportation of Natural and Other Gas By Pipeline

4) 34 Federal Register 15473 (Oct. 4, 1969)

49 C.F.R. Part 180--Carriers by Pipeline; Part 195--Transportation of Liquids by Pipeline

5) 34 Federal Register 18556 (Nov. 21, 1969)

49 C.F.R. Part 192--Gas Pipelines--Minimum Federal Safety Standards

6) 35 Federal Register 317 (Jan. 8, 1970)

49 C.F.R. Part 191--Transportation of Natural and Other Gas by Pipeline: Reports of Leaks--Office of Pipeline Safety; Leak Reporting Requirements

7) 35 Federal Register 13257 (Aug. 19, 1970)

49 C.F.R. Part 190--Interim Minimum Federal Safety Standards for the Transportation of Natural and Other Gas By Pipeline; 49 C.F.R. Part 192--Transportation of Natural and Other Gas By Pipeline: Minimum Federal Safety Standards

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8) 35 Federal Register 17659 (Nov. 17, 1970)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards--Miscellaneous Amendments

9) 36 Federal Register 7507 (April 21, 1971)

49 C.F.R. Part 191--Transportation of Natural and Other Gas By Pipeline; Reports of Leaks--Office of Pipeline Safety; Leak Reporting Requirements

10) 36 Federal Register 12175 (June 26, 1971)

49 C.F.R. Part 195--Transportation of Liquids by Pipeline--Telephonic Accident Reporting Requirements

11) 36 Federal Register 12175 (June 26, 1971)

49 C.F.R. Part 195--Movement of Pipelines Containing Liquefied Gases--Proposed Modification of Restriction

12) 36 Federal Register 12297 (June 30, 1971)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards--Requirements for Corrosion Control

13) 36 Federal Register 18194 (September 10, 1971)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline; Minimum Federal Safety Standards--Extension of Time for Confirmation or Revision of Maximum Allowable Operating Pressure

14) 37 Federal Register 1172 (Jan. 26, 1972)

49 C.F.R. Part 191--Transportation of Natural and Other Gas by Pipeline: Reports of Leaks--Elimination of Annual Report Requirement for Small Petroleum Gas Distribution Systems

15) 37 Federal Register 20694 (Oct. 3, 1972)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards--Deactivation of Service Lines

16) 37 Federal Register 21638 (Oct. 13, 1972)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards, Liquefied Natural Gas Systems

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17) 35 Federal Register 4760 (Feb. 22, 1973)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards--Qualifications for Pipe

18) 38 Federal Register 9083 (Apr. 10, 1973)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards--Definition of Service Line

19) 40 Federal Register 6345 (Feb. 11, 1975)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards--Qualification of Pipe Transported by Railroad

20) 40 Federal Register 20279 (May 9, 1975)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards--Odorization of Gas in Transmission Lines

21) 41 Federal Register 13586 (Mar. 31, 1976)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline; Minimum Federal Safety Standards--Emergency Plans

22) 41 Federal Register 34598 (Aug. 16, 1976)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline; Minimum Federal Safety Standards--Offshore Pipeline Facilities

23) 42 Federal Register 35653 (July 11, 1977)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline-Corrosion Control for Metal Alloy Fittings in Plastic Pipelines

24) 42 Federal Register 42865 (Aug. 25, 1977)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline; Part 195--Transportation of Liquids by Pipeline--Longitudinal Seams in Pipe Bends

25) 42 Federal Register 60146 (Nov. 25, 1977)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline--Conversion of Existing Pipelines to Gas Service

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26) 43 Federal Register 13880 (Apr. 3, 1978)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline--Design of Plastic Pipelines

27) 43 Federal Register 39389 (Sept. 5, 1978)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline--Corrosion Control Requirements

28) 44 Federal Register 42968 (July 23, 1979)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline; Joining of Plastic Pipe

29) 43 Federal Register 9184 (Feb. 11, 1980)

49 C.F.R. Part 192--Transportation of Natural and Other Gas By Pipeline--Design of Plastic Pipelines; Correction

30) 45 Federal Register 9184 (Feb. 11, 1980)

49 C.F.R. Part 193--LNG Facilities: Federal Safety Standards

31) 45 Federal Register 9220 (Feb. 11, 1980)

49 C.F.R. Part 193--LNG Facilities: Federal Safety Standards

32) 45 Federal Register 9931 (Feb. 14, 1980)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline; Joining of Plastic Pipe

33) 45 Federal Register 20142 (Mar. 27, 1980)

49 C.F.R. Parts 192 and 195--Transportation of Natural and Other Gas by Pipeline, Transportation of Liquids by Pipeline; Placing Longitudinal Weld Seams in Upper Half of Pipe

34) 45 Federal Register 23441 (Apr. 7, 1980)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline; Separately Protected Service Lines

35) 45 Federal Register 57402 (Aug. 28, 1980)

49 C.F.R. Part 193--Liquefied Natural Gas Facilities; Reconsideration of Safety Standards for Siting, Design, and Construction

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36) 45 Federal Register 70390 (Oct. 23, 1980)

49 C.F.R. Parts 192 and 193--Liquefied Natural Gas Facilities; Federal Safety Standards

37) 46 Federal Register 39 (Jan. 2, 1981)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline; Joining of Plastic Pipe

38) 46 Federal Register 10157 (Feb. 2, 1981)

49 C.F.R. Part 192 and 195--Transportation of Natural and Other Gas and Hazardous Liquids by Pipeline Incorporation by Reference

39) 46 Federal Register 37250 (July 20, 1981)

Parts 191 and 192--Transportation of Natural and Other Gas by Pipeline; Reports of Leaks and Federal Safety Standards

40) 46 Federal Register 38922 (July 30, 1981)

49 C.F.R. Part 195--Transportation of Liquids by Pipeline

41) 46 Federal Register 38922 (July 30, 1981)

49 C.F.R. Part 195--Transportation of Liquids by Pipeline; Addition of Water to Pipelines Transporting Anhydrous Ammonia; Revocation of Final Rule

42) 46 Federal Register 38922 (July 30, 1981)

49 C.F.R. Part 195--Transportation of Liquids by Pipeline--Correction

43) 47 Federal Register 9842 (Mar. 8, 1982)

49 C.F.R. Part 192--Transportation of Natural and other Gas by Pipeline; Metal Alloy Fittings in Plastic Pipelines

44) 47 Federal Register 13818 (Apr. 1, 1982)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline; Damage Prevention Program

45) 47 Federal Register 32719 (July 29, 1982)

49 C.F.R. Parts 191 and 195--Transportation of Natural and Other Gas and Hazardous Liquids by Pipeline; Change of Telephone Number and Addresses for Reporting Leaks and Accidents

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46) 47 Federal Register 46850 (Oct. 21, 1982)

49 C.F.R. Parts 192 and 195--Transportation of Natural and Other Gas and Hazardous Liquids by Pipeline; Inspection and Test Intervals

47) 47 Federal Register 49973 (Nov. 4, 1982)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline--Technical Amendment, Correction

48) 48 Federal Register 30637 (July 5, 1983)

49 C.F.R. Parts 192 and 195--Transportation of Natural and Other Gas or Hazardous Liquids by Pipelines; Qualification of Metallic Components

49) 48 Federal Register 25206 (June 6, 1983)

49 C.F.R. Parts 192 and 195--Transportation of Natural and Other Gas and Hazardous Liquids by Pipeline; Line Marking at Navigable Waterways

50) 48 Federal Register 48669 (Oct. 20, 1983)

49 C.F.R. Parts 192 and 195--Transportation of Natural and Other Gas and Hazardous Liquids by Pipeline; Repair or Removal of Girth Weld Defects

51) 49 Federal Register 7567 (Mar. 1, 1984)

49 C.F.R. 192 and 195--Transportation of Natural and Other Gas and Hazardous Liquids by Pipelines; Temperature Limits on Steel Pipe That Had Been Cold Expanded to Meet the Specified Minimum Yield Strength

52) 49 Federal Register 18956 (May 3, 1984)

49 C.F.R. Part 191--Transportation of Natural and Other Gas by Pipeline; Annual Reports and Incidents Reports

53) 49 Federal Register 19823 (May 10, 1984)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline; Design of Pipeline Components, General Requirements

54) 49 Federal Register 36383 (Sept. 17, 1984)

49 C.F.R. Part 195--Transportation of Hazardous Liquids by Pipeline; Isolated Corrosion Pitting

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49 C.F.R. Part 195--Transportation of Hazardous Liquids by Pipelines, Qualification of Welders

56) 50 Federal Register 13224 (Apr. 3, 1985)

49 C.F.R. Part 192--Transportation of Natural and Other Gas by Pipeline; Quality of Field Bends in Steel Pipe

57) 50 Federal Register 15895 (Apr. 23, 1985)

49 C.F.R. Part 195--Transportation of Hazardous Liquids by Pipeline; Regulation of Intrastate Pipelines

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